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The Important Point In the Anthracite Tax Decision

BY ITS decision in the Pennsylvania anthracite tax case the United States Supreme Court has permanently settled the question of whether anthracite is coal or something else. It has long been a matter of concern to the coal people that the consuming public would not differentiate between the product of the mines in that tight little community known as the hard-coal region and the product from the multitude of mines scattered elsewhere over the United States. So different are the conditions surrounding the mining and marketing of anthracite from those for bituminous coal that what can be said with respect to the one cannot be said with respect to the other. To keep the public from mixing them up in its thinking has been a task as yet wholly unsolved. The low mine price (usually) for soft coal and the high delivered price for anthracite have troubled the uninformed and caused a world of doubting on the subject of mining profits.

The Supreme Court sets the matter forth in clear language. "The difference between them is a just basis for their different classification; the differences are great and important. They differ even as fuels, they differ fundamentally in other particulars." Thus are its conclusions set forth. Having satisfied itself that the imposition of a production tax on anthracite did not constitute discrimination as between that fuel and bituminous coal, the court turned to the question of whether the tax imposed at point of production was in fact a tax on interstate commerce.

It seems to us that here is reiterated and reviewed in unmistakable language a question of more import to the coal industry than the mere matter of whether anthracite is just coal or a special kind thereof. The sum and substance of the court's opinion is that the production of coal is intrastate and not interstate commerce. Representatives of other states were in attendance upon the court, arguing that the action of Pennsylvania in taxing the coal they required was illegal because it would prevent free commerce between the states, as covenanted by the Constitution. To this the court says: "Whether any state or action of a state impinges upon interstate commerce depends upon the statute or action, and not upon what is said about it or the motive that impelled it . . . we can estimate then the contention made. It is that the products of a state that have, or are destined to have, a market in other states are subjects of interstate commerce, though they have not moved from the place of their production or preparation."

This contention is dismissed with the statement that if the "certainty of exportation of a product" from a state should determine it to be in interstate commerce before the commencement of its movement, the result would "be curious. It would nationalize all industries . . . coal yet unmined," because in varying percentages it is destined for consumption in states other than that in which it is to be produced.

The production of coal is intrastate commerce, not interstate, and coal ceases to be governed and protected by domestic law exclusively and begins to be protected and governed by the national law of commercial regulation at the moment it is on railroad cars and commences its final movement to another state.

Looking at the Hands of Accusers

WEST VIRGINIA and non-unionism as practiced in that state were thrown into the ring in a letter from the United Mine Workers to the U. S. Coal Commission last week. Taking Logan County as an example, the letter sets forth that union men, union organizers and union sympathizers are not allowed in that coal field. They are "eliminated" by deputy sheriffs in the pay of the coal companies. The union is simply not tolerated. In fact, the mine workers there and elsewhere in that state are parties to a form of individual contract binding the employee on the one hand and the company on the other from any participation with the union. The statement alleges that union members are "thrown into jail," "brutally mistreated," "killed while thus held prisoners," "arrested and jailed for no reason except that they are union members," etc. It is added that the "Commission itself will realize that something must be done in Logan County and certain other counties in West Virginia if the coal industry is to be stabilized and placed on the level where it should be."

The union spokesmen also contend that this is a condition "provocative of indignation and strife. It should not be allowed to continue. We believe this commission should find out just how the Logan County and West Virginia situation affects the coal-mining industry, for if the commission can find a way to put a stop to the practices that prevail in that field, it will take a long step toward the establishment of industrial peace on a permanent basis."

Then follow quotations from Senator Kenyon's report on that situation, and from President Harding, Woodrow Wilson, Theodore Roosevelt, William Howard Taft, Charles Evans Hughes, John D. Rockefeller, Jr., and others with respect to the inherent right of workers to organize, a right which it is contended is denied in Logan County and other parts of West Virginia. The purpose of this document is not concealed; it is plainly labeled as an invitation to the Coal Commission to investigate the non-union fields and to find some way to force the relinquishment on the part of the operators of their policy of keeping the union out. On a previous date the commission was told by the union that all mines should be unionized—the power of the United Mine Workers extended over the whole country.

Now the existence of non-unionism in one part of

the country is a fact that the commission may properly inquire into. It is entirely proper that the United Mine Workers should call attention to conditions in West Virginia. The opposition of the operators of that state to the union is growing instead of becoming less; there are fewer members of the United Mine Workers there today than a year ago. The union is concerned about this, for the more non-union miners there are the more coal the country can get when the organized districts go on strike. The mine workers have stated their case well. But they have, of course, stated but one side of that case. No one should expect them to put up the arguments for the other side.

Strikes, especially national strikes, and the causes thereof are matters of fact that the Coal Commission is charged to investigate. Measures to establish industrial peace may be looked for among its final recommendations to the President and Congress. It may be that to this end there will be much searching into these bitterly controverted points concerning the methods of certain operators to preserve their freedom from the United Mine Workers. But there also may be questions raised with respect to the methods pursued by the union in keeping intact its territory and in reaching forth for more worlds to conquer. To many it would appear that the anti-union contract of West Virginia is no more iniquitous than the check-off north of the Potomac. Both produce close shops.

No, the union has not stated the whole case to the commission in this document. One has but to change a few words, as Illinois for West Virginia, as union organizers for armed guards, to produce as strong an argument the other way. An impartial investigation may disclose that West Virginia non-union operators are fighting fire with fire, that the closed shop in the North is as fraught with dangers to the industrial peace of the coal industry as that of another kind in the South.

One may be pardoned for looking at the hands of those who protest the methods of the South. The union offers to produce as witnesses numerous persons who "have been victims of the Logan County system who can give direct first-hand evidence." But who will bring in the victims of Herrin?

Function of Storage

IN ALMOST all considerations of the value and purpose of storage of coal at the mines attention is mainly directed to the possibilities, advantages and disadvantages of storage for a period of months rather than to the hour-to-hour and day-to-day stabilization that storage affords. It may be well at the outset to point out that an ability to store about one hundred tons of coal at the tipple is in itself an advantage not to be overlooked.

Suppose that at a mine loading three sizes the supply of empty cars on hand has been cut down by loading to a single car partly full of one size. That single car, if there is no reserve at the tipple, cannot be loaded, for if it is to be filled with slack, then what shall be done with the lump, or if it is to be loaded out with lump, what will become of the resultant slack? The car must be, and quite generally in practice is, held over as a "part load."

As a part load it is counted as one car on the next day's quota. It will be constructively placed the next working day and the mine will lose a car.

It is clear then that the ability to store a small quantity of coal is desirable, but the expense of storage of this kind is by no means inconsiderable. Height rarely is provided at the tipple for the storage of slack and lump or of three sizes unless a conveyor belt is provided. As soon, therefore, as storage is afforded to fill so small a need the question arises, why not seek to obtain other advantages that will make the storage more profitable still? Why not provide for those many occasions where few cars are supplied or where none of them is of the kind that it can be loaded with slack or in other cases with lump, whichever may be needed? Why not arrange to provide against tipple breakdowns, the delay of operations due to dirt, manure or stone in railroad cars, or due to cars needing repairs, the derailment of mine locomotives or mine cars, the delay in running that would result if railroad cars were placed late, left the track or ran out before the day was wholly done? Why not, in short, create storage facilities that would stabilize running and give the tipple crew and all the men on day wage about the plant an efficient day's run?

The additional cost of the coal thus handled is not the real consideration. The loss of storage should not be distributed on the coal thus stored but on all the coal mined. If on the entire output the loss will average but little, it may be safely concluded that the gain from stabilization will far outweigh it.

Suppose, owing to a late arrival of railroad cars, a scheduled run proves abortive; the day force must be paid for two practically wasted hours. In fact after the two hours are concluded the coal standing in cars along the roadway of a drift mine may have to be hauled back to, and into, the mine to keep them free from frost. The distance they must be taken inside may be not inconsiderable if the roadway is the intake and if the ventilation must be kept as strong by night as by day.

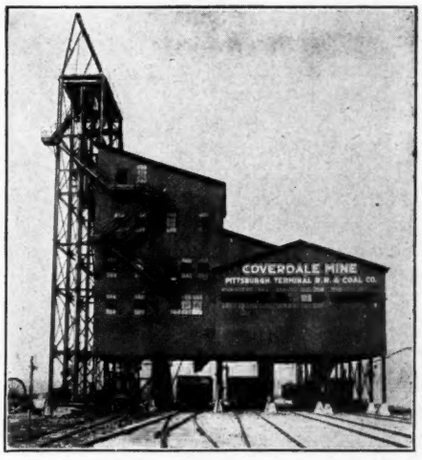
For these reasons, or for others which anticipate longer periods of storage, operators are coming to favor the creation of coal storage at mines. In many regions the practice is growing. The intermittent demand for slack, the desire to keep the men from wandering when cars are scarce and rivals for the services of miners are persistent, the anxiety to fill orders when no place can be found for the sizes of coal that the fulfilment of those orders would create, the possibility that railroad cars will be more plentiful later and the assurance that storage will have some effect when the railroad coal quotas are made up, is making operators store coal at the mines. To leave cars unloaded, even single cars, is a sure way to earn a reduced quota from the railroad by which the mine is served.

It should not be overlooked that using a railroad car as a storage bin is a poor way to increase car supply. Producers who more or less regularly tie up one, two or even three cars overnight with part loads are penalizing themselves as well as the railroads. A railroad car costs about $2,500. How much pocket storage on the tipple will that construct? The railroads cannot be blamed if they penalize heavily those who use their cars for such a purpose, even though it be a time-honored custom.

NOMINATIONS OF MEMBERS OF THE UNITED STATES COAL COMMISSION, the fact-finding body authorized by Congress Sept. 22 and appointed by President Harding Oct. 10, were confirmed Dec. 11 by the Senate, giving the commission official status.

At Coverdale Mine Nut and Lump Are Picked on Circular Picking Tables

BY A. F. BROSKY*
Pittsburgh, Pa.



Repicking Table Proposed for Boiler Coal—Bone and Slate Go to Separate Hoppers—Two Sizes of Lump Picked on One Table—Provisions for the Coal and Rock Hoisted in Same Cage

DISTINCTIVE as is the two-car cage shaft of the Pittsburgh Terminal Railroad & Coal Co.'s Coverdale mine, described in *Coal Age* Nov. 30, the tipple is not less so. It does not make many sizes of coal but it is notable for its picking tables and for the flexibility provided in its loading arrangements. Thus on either of two tracks (Nos. 3 and 4) can be loaded lump, combined lump and nut, combined lump and slack and picked run-of-mine. On track No. 1 can be loaded slack and emergency run-of-mine and on track No. 2, nut and combined nut and slack.

The tipple as it is today will handle 350 tons of coal per hour on the assumption that the coal separates in the proportions of 65 per cent lump, 10 per cent nut and 25 per cent slack. In order to maintain this hourly tonnage the coal must be hoisted at the rate of three 2½-ton mine cars per minute. As the cars are carried two at a time in self-dumping cages, it will be seen that the actual speed of hoisting is less than is customary for a single-car cage, the usual practice being to make about two hoists per minute as against 1½ which is the speed customary at this mine. The ultimate capacity of the tipple will be 500 tons per hour, which will be attained by the addition of another picking table for lump coal. This will extend out beyond track No. 4. The present plan of the tipple together with the proposed addition is detailed in Fig. 2.

The tipple design is unusual also in that it provides for the future installation of a table to repick refuse from the present lump-coal picking tables, thus furnishing a boiler fuel if desired. In years to come, if it be found necessary to store slack coal a belt conveyor will be installed to carry it to a storage bin. The present screening rig is built to accommodate an egg screen with chutes to deliver the screened egg coal to the proposed lump table, which after picking may be diverted to the boom over No. 4 track.

Coal is discharged from the two side-by-side mine cars on each of the self-dumping cages into individual receiving pans that guide it to weigh baskets, each of which has its own scale and recording dial. Each of

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NOTE—Headpiece shows Coverdale tipple with its four railroad tracks. The fifth track is used by the refuse-stacking larry which can be seen under the refuse bin.

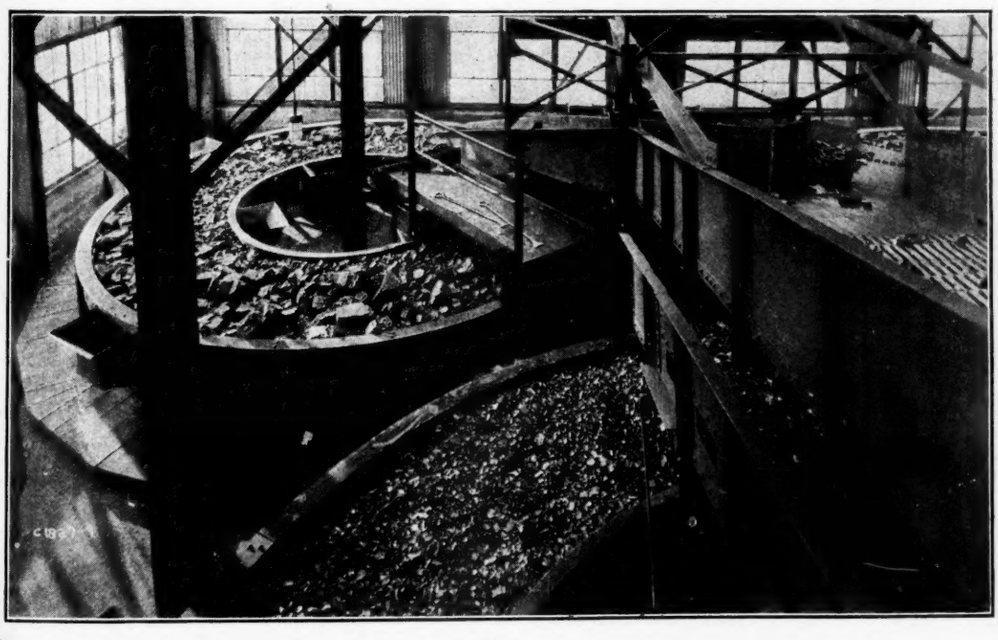


FIG. 1

Picking Tables

Lump coal, after screening, is divided between two circular picking tables. Before leaving the top deck, however, the lump coal is sized over a 3-in. grizzly, that which falls through being fed to the inside cage of the table. This enables the pickers to do better work. The nut table, in the foreground, is larger than that for lump. Circular tables have been used in the rock houses of metal mines for many years.

the four weigh baskets leads to a 12-ton receiving hopper. A shaking-pan feeder delivers coal from the receiving bin to the screen. By removing a plate in the bottom of the feeder, however, run-of-mine coal is led direct to the emergency loading chute and is discharged into railroad cars on track No. 1.

Lump coal, after passing over the sizing area of the screen, is divided into two parts by a diverging arrangement on the upper screen deck. In consequence half the lump coal goes to each of the two circular picking tables. The lump coal thus divided before discharging onto the picking tables passes over a grizzly screen that separates it into two sizes, over and under 3 in. The small size is fed toward the inside edge of the circular table and the large size toward the outside edge. In this way a more uniform coal bed is provided, with consequent increase in the efficiency with which the coal is picked.

The picked lump coal coming from the two tables is delivered to loading booms over No. 3 and No. 4 tracks. The nut coal passing over the lower deck screens is distributed to its picking table, from which it is loaded through a chute into cars on track No. 2. If desired, the nut coal may be delivered to either or both the lump tracks in combination with the lump coal. After being gathered in a steel pan the slack coal may be delivered through a chute to No. 1 or No. 2 track. Delivery to either track is controlled by the two-way chute and a flygate.

For the benefit of those not already familiar with circular picking tables it might be well to give briefly the details of their construction, dealing first with the two lump tables. These are of duplicate construction, each having an inside diameter of 10 ft. and an outside diameter of 20 ft. The table is a circular structural-steel frame covered by removable sections of ¼-in. steel plate. On the under side is a circular track of steel rail, which also fastens to the frame. The inside wall of the table is formed by an angle 6 in. high that revolves with the table frame; but on the outside stationary guard angles form the wall. The table is supported on eight cast-iron pedestals equipped with 12-in. cast-iron supporting wheels designed with but a single flange. The nut table is constructed in a similar manner but is larger, having 18-ft. and 28-ft. diameters.

All three tables are driven by one 50-hp. slip ring motor, the countershafts which drive the two lump tables being actuated by a single cut-steel spur gear. The countershaft of the nut table is driven through a chain transmission, one bevel-gear and a spur-gear reduction. The master wheel of the spur-gear reduction is a segmented rack bolted to the under side of the frame. A jaw clutch on the driving sprocket allows any one table to be operated independently of the others.

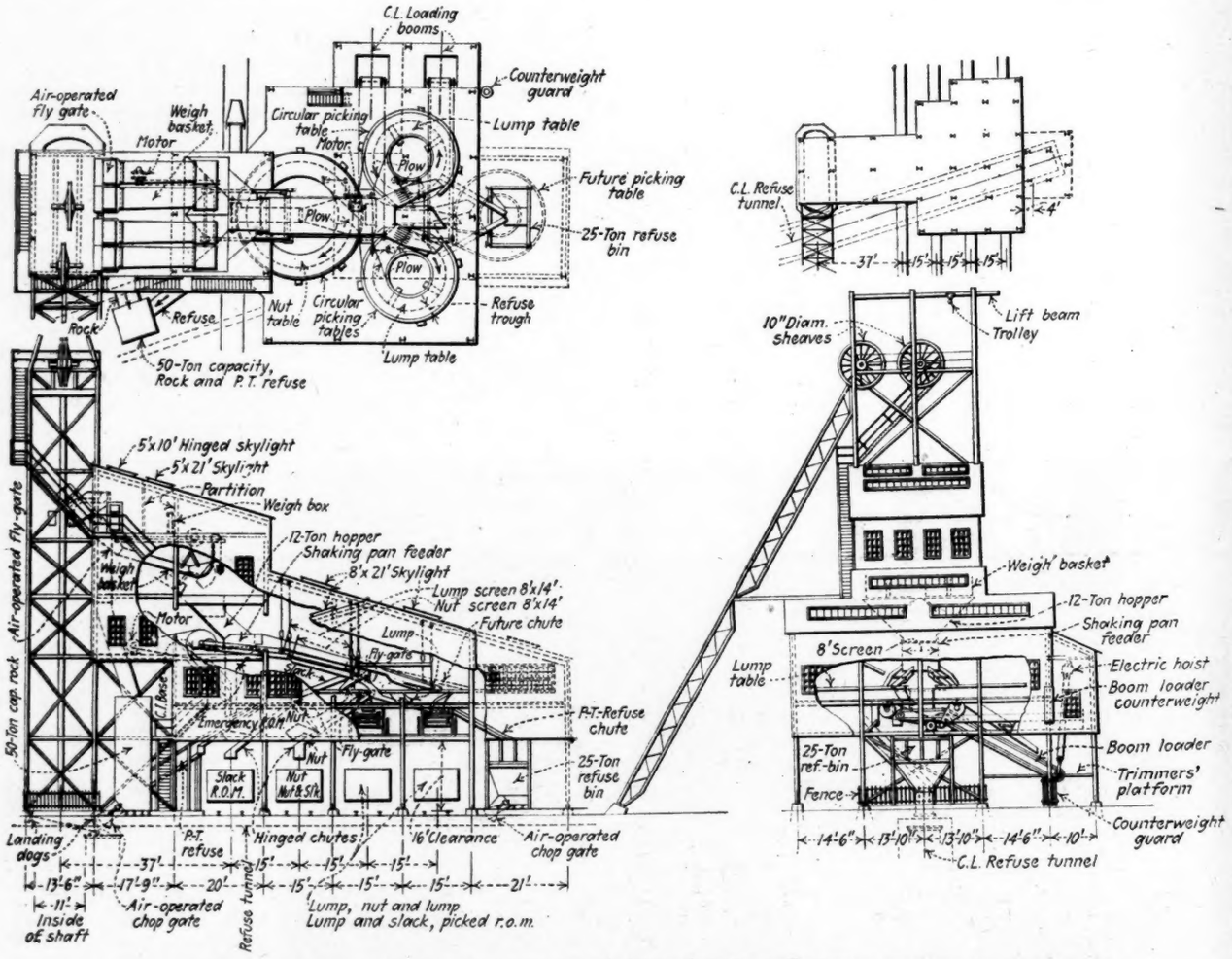


FIG. 2—ELEVATIONS OF COVERDALE TIPPLE OF PITTSBURGH TERMINAL RAILROAD & COAL CO.
When the tonnage is raised to 500 tons per hour, as is planned, another picking table for lump coal will be provided in an extension beyond track No. 4. This addition is shown in the drawing. There also is provision for repicking refuse so that from it may be obtained a more passable boiler coal free of noncarbonaceous material

A stationary steel plow on each lump table delivers the picked coal through a chute to the loading boom over track No. 4, and a removable plow diverts the coal to a chute leading to the loading boom over track No. 3.

The problem of dumping hoisted rock and bypassing it to the rock bin, while simple enough for the single-car cage, is more difficult of solution where two cars are dumped side by side, perhaps one loaded with rock and the other with coal. For this purpose each receiving pan is provided with a flygate operated through a four-way valve. Either or both flygates on the dumping side may be thrown to let the rock down into a 50-ton bin, where it is removed to the slate pile by means of a refuse-stacking car.

The cager on the shaft bottom signals the dumper or check taker and designates the car or cars containing rock by pressing one or two contact buttons, as the case may be. This operates a remote-control switch, ringing a warning bell and lighting the lamp or lamps by which the slate cars are indicated. The dumper then throws his air-operated flygates accordingly. The cage on dumping throws a trip switch, thus breaking the circuit. A klaxon signal, when sounded from the trimmers' platform, warns the dumper to hold the coal just dumped in the weigh baskets, and the picking-table crew to stop the table and screens. The picking-table crew may likewise warn the dumper to hold the coal.

Refuse picked from a lump table is thrown into one of five small boxings and into a dirt trough. It is then collected by five revolving dirt plows attached to the table frame, which carry the refuse to a conveyor, which in turn transports it to a refuse bin. This bin is wholly separate from the rock bin. The refuse from the nut table is deposited directly on the conveyor which leads to the refuse bin.

In addition to the two weighmen the tipple force consists of eleven men. The man who is stationed at the dumping point to make sure that the cages dump properly also lifts the checks. Each picking table is manned by two pickers, one on the inside and one on the outside of the table. Four car trimmers attend to the coal loading and drop the railroad cars. Rock and refuse from the tipple is conveyed to the dump by a crew of two men.

The tipple was designed and built by the Heyl & Patterson Co., Inc., of Pittsburgh, Pa. The tipple structure is built of steel and concrete and covered with corrugated siding and roofing. Six skylights provide excellent natural lighting for the weigh office and the picking deck. All floors are of concrete.

The picking tables have now been in use for two years and consequently it may be well to set forth the advantages that the officials of the Pittsburgh Terminal Railroad & Coal Co. regard as points in their favor. Foremost among these, it is urged, are the small number of moving parts in their construction; less energy therefore is used in driving them. It is pointed out that the apron picking table has two strands, the upper and the lower. Both are in motion, but only the upper one is available for picking. Thus only half the apron conveyor is serving a directly useful purpose, yet the movement of both parts consumes energy. It is said that the circular table consumes one-third as much power as the straight table.

In every tipple there is much fine dust which has the ability to work its way between moving surfaces, such as the pins, bushings, rollers, links and pans of which the conveyor is built up, parts which when assembled cannot be efficiently lubricated. When such rubbing surfaces are lubricated the lubrication is not retained for any satisfactory length of time.

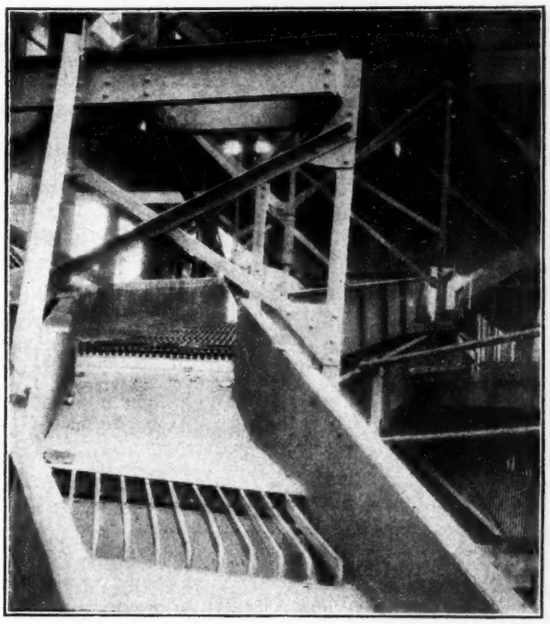


FIG. 3—A CHUTE TO LUMP PICKING TABLE

In the rear can be seen the main screen, in which the nut is removed. In the foreground is one of the two chutes by which half the lump coal passes to one of the picking tables. The 3-in. grizzly may be noted, by which the lumps which will pass a 3-in. screen are separated and allowed to fall on the inner edge of the table.

The circular picking table for lump coal in the Coverdale tipple is 20 ft. in diameter and the inside diameter is 10 ft. This circular table has then a mean diameter of 15 ft. and if straightened out would have a length of πD, or approximately 47 ft. But the segment between the throat of the shaker screen and the discharge point is not effective, so, instead of 47 ft. being the equivalent length of the table it should be figured as only 40 ft. The links, pins, pans, etc. of the straight table when assembled form an endless belt which if cut at one point and straightened out will have a length more than twice that of the table. Allowing, let us say, 5 ft. as the length of those portions that pass over the sprocket wheels, the total length of the belt is about 90 ft.

Further, it is pointed out that in a conveyor 90 ft. long the length of roller chain is 180 ft. and for every 3 ft. of chain are four pans, five pins, four bushings, four rollers and eight links, or in all 1,440 moving parts all subject to friction and to wear. There are 240 pins and bushings that must be lubricated as against eight supporting wheel bearings on the circular table.

The straight table with its many moving and bearing parts must be lubricated frequently, but the circular table not only has fewer bearing parts but needs the application of a lubricant less frequently. The supporting pedestals and wheels of the circular table are lubricated through grease cups that are filled only at intervals. It may be added that the table is absolutely rigid. It is supported by cast-iron pedestals on which are mounted large supporting wheels. In these bronze and not steel bears on steel. As they are placed under the picking table they are protected from particles and small lumps of coal which might work their way between the moving surfaces.

How the Coal Trade Is Organized in Germany*

Trade Parliaments Eliminate Economic Tension Between Employee and Worker—Council of Economics Advises on Legislation Affecting Basic Industries—Distribution of Coal in Charge of Federal Coal Commission

By F. Z. Nedden, M.E.

THE real Germany, like China, rarely is visible to the foreigner. This has never been proved more true than within the last few years. While the eyes of the world and the ears of public opinion were fixed on the external signs of a gigantic struggle in Germany between democratic, pacifist and socialistic tendencies on one side and monarchists, militarists and conservatives on the other, while the disastrous effects of the Versailles Treaty daily became more painfully evident, and while the casual onlooker saw little but political unrest, economic decay and the glaring contrast between a false luxury and utmost human misery, Germany has been busy in a silent and unobtrusive way thoroughly reorganizing her economic structure along lines entirely new and original. Quite a number of her new organizations have now been working for two or three years under the heaviest economic stress and have stood the test of practicability. They are, therefore, no longer to be regarded as experiments, but worthy of the most earnest attention of all industrial countries of the world—all the more so as the social and economic problems confronting the young German Republic are different only in degree but not in essence from those familiar to all the rest of the civilized world.

Trade Parliament an Interesting Innovation

Among the innovations which Germany called into life on her way to her new ideal of a government of an industrial people, by an industrial people, and for an industrial people, her economic self-administrative bodies, or "trade parliaments," are of the most immediate interest. They represent a new way to alleviate or eliminate economic and social tension between employers and employed, producers and consumers, and form a platform upon which the problems arising in each trade can be settled separately and by men who know the trade, thus immensely simplifying the regulation of the whole industrial machinery of the country and preventing political ignoramuses from meddling with the fine tissues of its productive life.

It will be remembered that in 1920 Germany created a provisional central parliament of industries and trades known as the Federal Council of Economics (Reichswirtschaftsrat). This body is to counsel the Reichstag and the government in all economic matters and especially in all questions of economic legislation. Eventually this Federal Council of Economics is to be based throughout on branch or trade parliaments representing all the various trades separately; but so far only four of these self-contained trade councils have been instituted to represent the most important basic productions, namely that of coal, iron, metals and potash. Of these the Federal Coal Council (Reichskohlenrat) is of most immediate interest to the readers of *Coal Age*.

This council historically developed out of conditions which only 30 years ago were practically identical with those prevailing in the United States today. No trusts or syndicates existed among the operators. The mining association (Bergbauvereine) which had formed in various districts did not in any way interfere with the absolute freedom of the individual colliery as regards production, prices and competition. Some 20,000 to 30,000 coal merchants, dealers and agents, mostly without any organization whatsoever, supplied the channels by which the coal had to make its way from the mine into the bin of the "last consumer."

Owners Form Ruhr Syndicate

Within the last decade of the nineteenth century ruinous competition both from without (England) and within drove the coal owners of the Ruhr to forming the well-known Ruhr Coal Syndicate. Its functions consisted in apportioning a certain percentage of the total Ruhr output—fixed at every new extension of the syndicate agreement—to each individual pit, and in lowering or raising the total output according to the needs of the moment. The Prussian state collieries joined the syndicate on equal terms with the private coal mines, the state collieries being allowed about 10 per cent of the total output of the Ruhr. The syndicate took over and sold through its central sales department all coal mined by its members, including the Prussian state collieries, with the exception of such fuel as certain collieries connected with other industrial enterprises, such as furnaces, iron works, etc., were allowed to put aside for their own consumption in these affiliated works, a maximum percentage of such privileged reservation being stipulated in the syndicate agreement. The Syndicate fixed the prices at general meetings of its members.

This arrangement proving effective and satisfactory, the Syndicate was extended from term to term and other groups of collieries, like those of Lower Silesia, followed the example of the Ruhr collieries. Furthermore, the central sales department of the Syndicate gradually simplified the selling organization by concentrating the most important coal merchants within the various states and provinces of Germany into eleven trading companies, one for each district.

This was the state of development in 1914. The exigencies of the war were at first well met by the organization as it stood, the syndicalized output of the Ruhr mines constituting about two-thirds of the total German coal production. Not until 1917 did the economic stress become so heavy that the then Imperial Government and the Reichstag found it necessary to regulate by imperial authority the distribution of the entire German coal output. For this purpose the office of Coal Commissioner was created, but his powers were and are by no means absolute. As his title of "Federal Commissioner for the Distribution of Coal" indicates, his powers are limited to distribution only, production, transport, and the fixing of prices being beyond

*This is the first instalment of Herr Nedden's article on German coal control. The concluding part will appear next week.

his jurisdiction. His activities, however, served greatly to promote the crystallization of the German coal trade. For the purpose of distribution he established twelve district offices of distribution, one for each of the eleven main coal- and lignite-mining districts and one for the combined production of gas coke. He also formed, for the purposes of control, twenty-five coal-trade bureaus for the various states and provinces. These measures served to accustom the various groups of mines and traders to co-operation, but they also enhanced the desire of the federal and state authorities to retain permanently the control over this basis of all industrial activity which the temporary needs of warfare had thrust into their hands.

Committee of Socialization Named

When, therefore, the revolution of 1918 forced into the forefront the demand for "socialization" of the mines, even those governmental circles which, like the Prussian Mining Administration, were by no means in sympathy with the then socialistic majority, were not opposed to this measure in so far as it involved the complete submission of the coal industry to government control and the absorption by the federal exchequer of its profits. The coal trade itself, however, was strongly opposed to all such attempts and offered a united front against both the socialistic and bureaucratic tendencies. Under the stress of public opinion and the socialistic majority in the federal government the celebrated Committee of Socialization was formed. It consisted of miners' representatives, socialistic theoretical economists and a few practical business men, who, however, did not belong to the coal trade. This committee could neither arrive at a unanimous decision nor did any of its various suggestions appear practicable. Times were too precarious for extreme socialistic experiments. The opponents of "socialization," therefore, won some ground. Yet it was impossible altogether to return absolute power to the owners in the domain of the coal trade as it had existed before the war.

The resultant had to be found in the polygon of these six component forces: Public opinion (coal consumers), theoretical socialists, governmental bureaucracy, and the three diverging interests within the coal trade itself, coal owners, miners and merchants. The National Assembly, by passage of the Coal Trade Act of March 23, 1919, ordered the creation by a "council of experts" of a permanent Federal Coal Council which was to be the instrument through which the community controlled the coal trade of the country. The composition of the "council of experts" closely resembled that of the permanent Coal Council which formed the ultimate result of its deliberations. This result was laid down as an integral part of the Coal Trade Act, received the consent of the National Assembly on Aug. 20, 1919, and immediately went into force.

Considering the structure of the German Coal Trade Act and the organization for which it forms the basis, as well as the various historical influences which were at work at its inception, it must be owned that they were balanced very cleverly indeed. The intention of the Committee of Socialization—namely, to transfer the mining property into the hands of the community in one shape or another—was frustrated. It was acknowledged that individual liberty in enterprise is an asset which cannot be dispensed with in carrying the coal trade, and with it the whole nation, through the dark and bitter years which were to come. The property rights of the coal owners, therefore, remained untouched. However, in order to prevent liberty becoming license, the individual coal owner was firmly placed in an organization that left him enough space in which to move about and enjoy his life, yet kept him from running amuck.

Corresponding to the twelve district offices of distribution as instituted by the Federal Coal Commissioner twelve syndicates were organized. Each syndicate comprises all mines within its territory. The syndicates formed voluntarily. Seven syndicates (the Upper and the Lower Silesian, the Ruhr, the Aix-la-Chapelle, the Saxon, the Lower Saxon, and the suspended Saar Syndicate) are composed of collieries, three (the Rhenish, the East Elbian and the Central German Syndicate) consist of lignite mines, and one syndicate each is composed of the Bavarian low-grade soft-coal mines and the gas works as producers of coke.

These twelve corporations in turn compose the central representative organization of fuel producers, called the National Coal Association (Reichskohlenverband). This association, however, is not autonomous or supreme, but is subordinated to the parliament of the coal trade, the Federal Coal Council (Reichskohlenrat).

All syndicates and the "Association" are limited companies. Under the act each syndicate and the association must elect one miners' representative into its management and two or three miners' representatives and one representative of the employees into its board of directors. The National Coal Association (the "syndicate of syndicates") must, in addition, elect one representative of the consumers into its board of directors. The voting power of each syndicate in the association corresponds to its salable output during the preceding year.

Distribution of Federal Coal Council

The Federal Coal Council is not a company, but a parliament composed of 60 delegates from all parties immediately interested in the coal trade, distributed as follows: 15 representatives of the coal- and lignite-mine owners; 15, miners; 3, employees of the coal and lignite mines; 1, gas works; 1, workmen employed in gas works; 5, wholesale and retail coal merchants; 1, coal merchants' employees; 3, governments of the German states, representing the bulk of the consumers not specially represented (they have by no means a privileged voting power); 2, industries consuming coal; 2, workmen employed in those industries; 2, artisans as consumers of coal; 2, co-operative societies; 1, town consumers; 1, country consumers; 1, railroads; 1, ocean shipping; 1, river and lake shipping; 1 coal mining expert, 1 expert for the scientific exploitation of coal and 1 representative of the boiler-inspection societies.

About one-half of the members of the Federal Coal Council (12 representatives of the coal owners, all of the miners, and the employers and workmen of the coal-consuming industries and the gas works) are indirectly elected by the works' owners and workmen all over the country through the intermediary of another parliamentary body called the "Working Community" (Arbeitsgemeinschaft). This institution was created in 1918 for the purpose of constituting a platform on which all social and economic questions and controversies between employer and workman are collectively settled by an equal number of workmen's and employers' representatives. The "Working Community" so

far has excellently fulfilled its object, and is the given electoral body for the purposes of the Federal Coal Council, as its members have without exception come forth from gradatory elections starting in each single shop or mine and then concentrating according to branches of industry on one hand and districts, provinces and states on the other. The members elected to the Federal Coal Council by the "Working Community," therefore, carry the confidence of all employers and men.

The other half of the members of the Federal Coal Council are elected by the big associations for the maintenance of the interests of the coal merchants, the local dealers, the crafts and trades. The organization of wholesale and retail coal merchants has developed particularly during the last ten years, into a powerful central association with a complete network of branches all over the country.

A few members are not elected, but are appointed by the Federal Secretary of Economics and Production (Reichswirtschaftsminister), among the representatives of the state-owned collieries (the German Federation as such owns no mines nor collieries). The term of membership is three years. One-third of the members are changing each year, but re-election or renomination is admissible. In this way the council is always well stocked with members who are intimately acquainted with its business.

In perusing the list of membership we find the best known names of the German coal trade. Hugo Stinnes, Dr. Silverberg, president of the Rhenish Lignite Syndicate; Dr. Hugenberg, of the Krupp Works; several directors of the Rhenish-Westphalian (Ruhr) Coal Syndicate; Dr. Hilger, the well-known president of the Vereinigte Koenigs und Laurahuette of Upper Silesia; L.-Geheimrat Arnhold of the old firm of Caesar Wollheim, and many other notable "coal barons" are among the coal owners' and merchants' delegates, while the general secretaries and secretaries of all the various miners' unions act as representatives of the men. The Federal Coal Council elected for its president the general manager of the Harpen Colliery, Bergrat Kleine. The vice-presidency was turned over to a representative of the workmen, Herr Imbusch, general secretary of the Christian Miners' Union, which is the least radical among the organizations. Both still hold their office.

A considerable percentage of the members belong to the Reichstag, to the Federal Council of Economics or to the Diets of various German states. This has proven a great advantage in synchronizing the business in the various political and economic parliaments.

The council was fortunate in obtaining at its inception the services of Eugene Koengeter as general secretary. It is principally due to his great commercial and diplomatic abilities, his knowledge, tact, resourcefulness and broad common sense, that the work of the council was initiated and conducted not on bureaucratic but on sound business principles.

In looking over the above list it will be observed that the fifteen coal owners are in a minority and could be outvoted by the sixteen consumers' representatives if the workmen kept neutral. It must be remembered, however, that it is improbable that the coal miners would remain impassive in questions affecting the development of production and, further, that all coal and lignite mines are combined in the National Coal Association and, their representatives therefore, generally constitute a solid vote while it is difficult to get all of the sixteen consumers' representatives "under one hat." Moreover, the coal owners' expert knowledge of all economic and technical questions connected with mining and the sale of coal secures for them a mental weight which often turns the scales of the deliberations of the council in their favor. As regards pure questions of wages, hours or other conditions of employment, these are threshed out within the mining group of the "working community," and the disadvantage in which the composition of the 60 members of the council might here leave the 21 representatives of the employers is, therefore, rarely, if ever, to be feared by them.

Headlight for Mine Service Made Bump-, Dust-, Moisture- and Jolt-Proof

IN the darkness of the mine the best warning to others of the approach of a trip is a powerful headlight on the locomotive. It also enables the motorman to make speed with safety, as it permits him to see obstructions in time to stop and guard against emergencies.

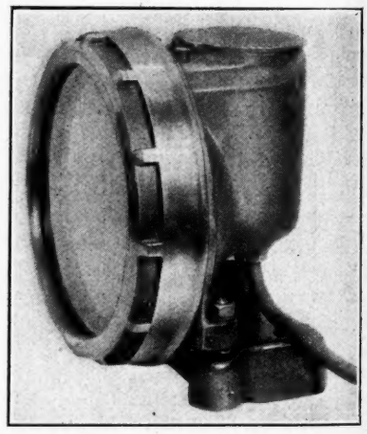
The new headlight manufactured by the Jeffrey Manufacturing Co. is made with a body of great strength shaped so as to cause heavy blows such as may result from falling coal to glance off without doing any injury. The headlight is mounted on a sub-base with a three-point double spring suspension; no small hinges, knobs or thin gratings are used, such as would be readily broken by falling coal.

The parabolic reflector is made of brass, nickel plated and highly polished, to insure a long beam of brilliant light. The metal reflector is used because it is more suitable for mine work than one made of glass.

To have the headlight give satisfactory light continuously it was necessary to make it dust proof and moisture proof. The construction used is that ordinarily required when a headlight is approved by the government, for use in gaseous mines.

The lens, which is a ¾-in. thick plate glass, is held in place in a heavy cast-brass ring by a nut and heavy packing. The ring with its lens is screwed onto the main body of the lamp.

In the top of the lamp body is a hand hole which is closed by a large brass plug. Through this hand hole the focus of the lamps can be adjusted. The cable leading into the lamp is a three-conductor Duracord and passes through a stuffing box which is of the same construction as that used in making permissible motors approved by the United States Government. One of the novel features of this lamp is the use of two standard sockets, one to receive the concentrated filament lamp, which is a 94-watt 110-volt connected two in series with a balancing resistance for 250 or 500 volts. The second socket takes the ordinary lamp used about the mine. The lamps in this socket are used only in case the concentrated filament lamp is not available.



BUMP- AND DUST-PROOF HEADLIGHT FOR MINE SERVICE

Mining a Two-Foot Coal Seam at Forest City

Two- and Three-Road Chambers Are Driven Sixty and One Hundred Feet Wide Respectively—Mining Machines Undercut Coal—Rock from Roadway Used to Pack the Chambers from Which Coal Is Removed

BY DEVER C. ASHMEAD*
Kingston, Pa.

FOR many years the anthracite coal field has been known as one in which the beds are thick. From his early study of the geography of Pennsylvania everyone knows that in some places the Mammoth bed reaches a thickness of 100 ft. or more. Comparatively few realize, however, that probably the greater part of the coal comes not from the Mammoth bed but from the thinner beds of the region.

This is due to the fact that over a large portion of the territory all the first mining in the Mammoth bed has been completed. In many places the second mining also has been performed. In places the wasteful methods of mining pursued in the past have prevented large areas of this bed from being recovered.

It is particularly true of the northern anthracite region that the thicker beds have been completely mined out, both stages of the work having been completed. Here the operators have been compelled to turn to thinner and thinner beds as the first mining was completed in those that were thicker.

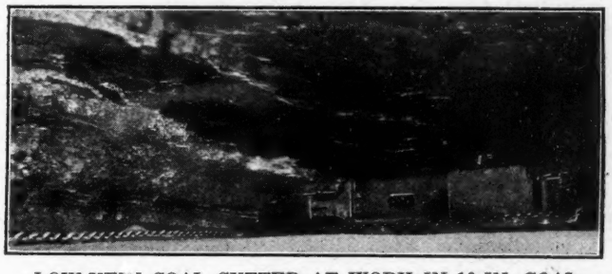
At many operations it is not advisable or possible to complete the second mining, as buildings have been erected on the surface and coal has to be left for their support. In other places a thick bed of water-bearing glacial drift, such as the Buried Valley of the Wyoming field, makes second mining imprudent or impossible. Some workings also are under the Lackawanna or the Susquehanna River and other seams again cannot be entirely removed without disturbing the overlying thinner beds of coal. This has reduced the quantity of coal in the thicker beds that is available for immediate recovery.

For these and other reasons the attention of the operators has been drawn to the thinner beds, which only a few years ago were considered worthless. Only by accepting the inevitable could they keep their output up to a point consistent with economy. If production falls off only a little the overhead, which remains constant, greatly increases the cost of production. If, however, the production can be maintained by the mining of the thinner beds of coal, then the overhead, being spread over an equal tonnage, will remain constant.

This is a worth-while consideration even though the actual cost of mining these thinner beds is greater than it would be for those that are thicker. If, however, it is necessary to increase the overhead, then no profit would accrue to the coal company from this extra production. In time, however, a point will be reached when the production from the thicker beds will have decreased and the production from the thinner beds increased so that the balanced profit from the two classes of beds will reach a point at which there will be no profit, and the profit that the operation formerly showed will turn into a deficit.

Another factor to be taken into consideration is taxes. Speaking broadly, the coal companies are taxed for any coal that is more than 2 ft. thick, and as long as this coal remains in the ground this tax has to be paid. Consequently taxes on the property ought to decrease as the coal is removed. That, however, seems to be a pretty theory not realized in practice, for the general experience is that no matter how much the coal reserves are depleted, the assessed valuation of the property for taxation purposes nevertheless continually increases.

Throughout the anthracite region the chamber-and-pillar system, with its two mining operations, has been general. The first consists of the driving of gangways and chambers and the second of the reopening of these gangways and the removal of the coal left in the pillars. Often many years elapse between the two operations and the expense of reopening, therefore, is heavy and naturally reduces the margin of profit on coal from the second mining. But the thickness of the coal, the protection of the overlying measures and in certain cases the need for surface support has warranted such a dilatory procedure.



LOW-VEIN COAL CUTTER AT WORK IN 19-IN. COAL

A narrow streak of this thickness can be mined when thereby coal of a profitable thickness can be reached. The coal in this bed ordinarily is 28 to 29 in. thick, but here a local roll cuts it down so that the top of the machine is within 2 in. of the roof. This room is 60 ft. wide.

In thin-bed mining, however, such a method might be entirely too expensive and good judgment might require that all the coal be recovered in one operation or practically one. This is particularly true when there are no overlying beds to be protected or when the surface does not need support. If the bed of coal to be mined is thin and sufficient filling can be obtained, however, then it may be possible to remove all the coal and gradually drop the surface and overlying beds without disturbing them.

In the Ring Bed at its Forest City colliery the Hillside Coal & Iron Co. is mining thin coal by several unusual methods, three of which will be described in this and later issues of *Coal Age*.

The Ring bed in the Forest City region is known also as the Upper, or First, Dunmore and the Top Red Ash. The coal at this point has an average thickness of 2.35 ft. and in some places is only 24 in. thick. In the particular place where the photograph was taken

*Anthracite Field Editor, *Coal Age*.

from which Fig. 1 was prepared the coal was only 19 in. thick. This was due to a local roll, and the indications were at the time of taking the photograph that the coal would resume its normal thickness. It is impossible at the present time to work the seam successfully when less than 24 in. thick.

The coal is extracted by room-and-pillar methods, but the effect is really the same as if a short longwall face were used. Where the coal in the bed above the one being mined has been entirely removed, rooms 100 ft. wide have been driven. These rooms have three roadways, one along each of the ribs and one in the center of the room. As the coal beds in this region lie practically flat it is necessary to take the mine cars into the chambers or use some form of mechanical conveyor to transport the coal from the face to the gangway.

In this case the mine cars are taken into the rooms; therefore it is necessary to take down top to permit the mine cars to enter. Top is taken in preference to bottom, as mining machines are used to undercut the coal, and it is much more convenient to handle the mining machines in and out of the working places when the bottom is left intact. If bottom were taken the machines would have to be raised and lowered from the roadway up to the bottom of the coal bed.

The rock thus shot down is hand packed in the chambers between the roadways. Sufficient rock is thus obtained to pack solidly the entire space from which the coal has been removed. The roadways are about 10 ft. wide and enough rock is taken down to make a clear height of 5 ft. or more above the top of the rail.

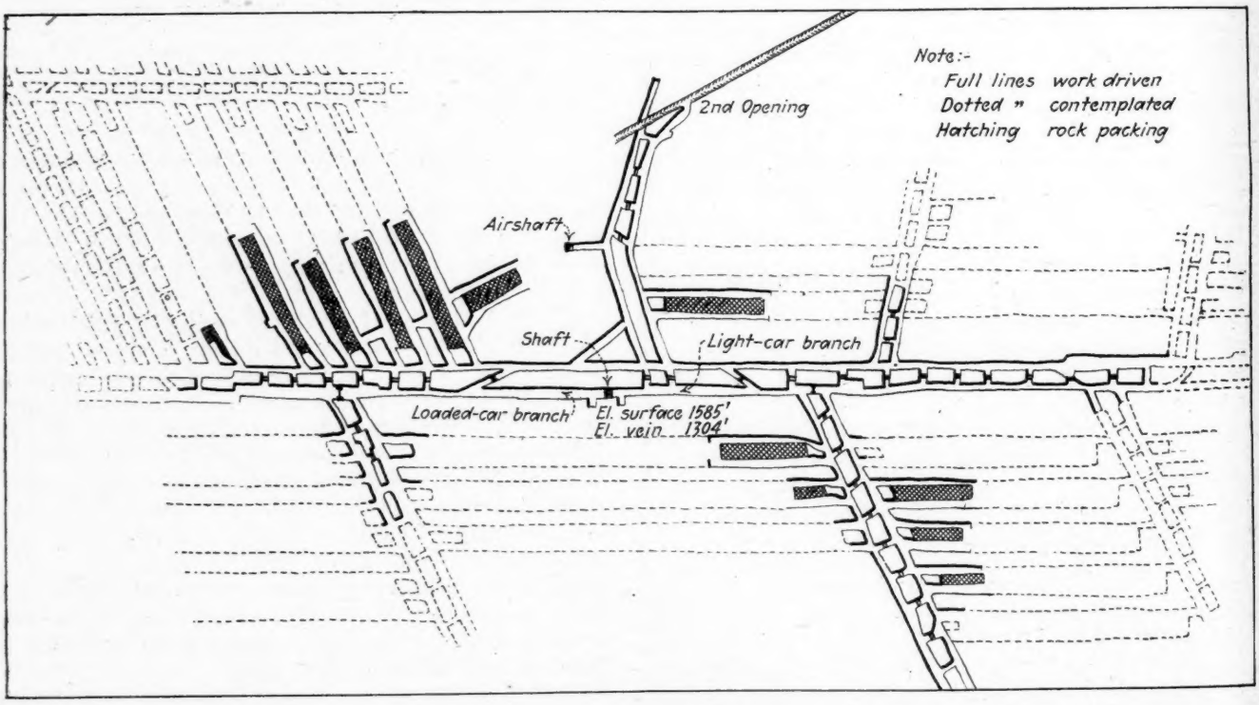
As soon as the roadways have been driven in far enough to insure a full 90-ft. neck they are connected, making a room of the required width. After the rooms are widened out to their maximum width, a Sullivan Ironclad low-vein undercutting machine is used to undercut the coal. The height of this machine is 17 in., so it can readily be seen that at the point where the photograph was taken there was only 2 in. of clearance. The machine makes an undercut of 5 ft. 6 in.

It is interesting to note the way the miners themselves have planned their work so as to reduce to a minimum the handling of the coal. When they fire their first shot they loosen the coal nearest the roadway. This makes three tight shots to a chamber 100 ft. wide, one on each rib and one in the center. After loading the coal from these shots another set is set off so that the coal is blown in the direction of the nearest roadway; this reduces the distance that the miner has to move the coal. A third and fourth round of shots are needed, and these also are so placed that the coal, instead of being just broken and ready to fall, is thrown in the direction of the roadways.

The Clark bed is the next above the Ring seam and is separated from it by about 80 ft. or rock. Where the pillars have been left in the former the rooms in the Ring bed are driven only 60 ft. wide and a 40-ft. pillar is left between the rooms. This is done so as to afford a greater protection to the bed above.

When the rooms are only 60 ft. wide only two roadways are driven, one along each rib. The same method of mining is used in the 60-ft. chambers as in those that are 100 ft. wide. It is the intention to begin second mining as soon as all the rooms on one gangway have been driven up. It is thought that by that time the rock pack will have taken some of the weight and when the pillars are removed the upper measures will be supported by the rock packing. Of course there will be some settlement, but it will be gradual, and the measures and surface above will be dropped so easily that no appreciable disturbance will be felt in the other beds of coal or on the surface.

Probably one of the most important factors determin-



WORKINGS IN FIRST DUNMORE BED AT NO. 2 SHAFT, HILLSIDE COAL & IRON CO.

All the rooms shown here are 60 ft. wide except two on the lower left-hand corner and two near the upper right-hand corner of the illustration, where the width will be 100 ft. when the rooms are driven. It will be noted that they have three necks and roads whereas the 60-ft. rooms have but two. The coal being on an average only 2 ft. 4 in. thick, the top ripped to make a 5-ft. headroom in the roadways serves to pack the full width of the room from floor to roof.

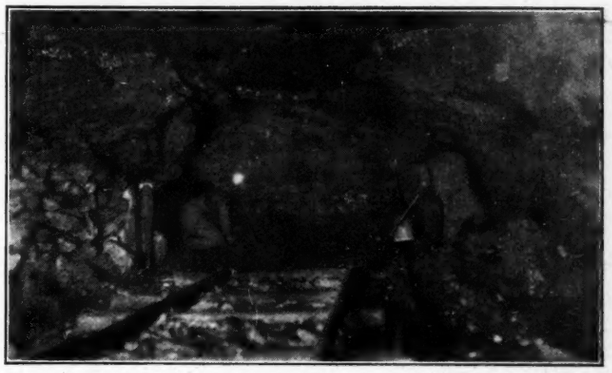
ing whether any new application of a method of mining will be successful is the character of the roof immediately over the coal and also of the overlying measures. It should be stated, therefore, that on the top of this coal is 2 ft. 9 in. of fireclay, then 6 in. of coal. Over this thin seam is 40 ft. of sandstone. The accompanying legend from a borehole shows the character of the measures from the surface down:

CROSS-SECTION OF MEASURES IN BORE HOLE AT SHAFT

Surface, 10 ft.
Rock, 62 ft.
Grassy Island coal bed, 8 ft. 6 in.
Rock, 43 ft. 9 in.
New County coal bed 2 ft., Not worked.
Rock, 33 ft. 9 in.
Top Clark bed, 5 ft. First mining completed.
Rock, 30 ft.
Bottom Clark bed, 2 ft. First mining being performed.
Rock, 77 ft. 9 in.
First Dunmore bed 2 ft. 9 in. Mining described in article.
Rock, 100 ft.
Second Dunmore bed, 2 ft. 10 in. First mining being performed.
Rock, 12 ft.
Third Dunmore bed, 4 ft. 8 in. Mining.

The distance from the surface to the top of the first Dunmore bed is 275.5 ft. Two mining machines are used and they can each cut three 60-ft. chambers in an eight-hour day. It is thought that they will be able to cut three of the 100-ft. chambers as soon as enough of these are started. The cars are transported to the shaft by trolley locomotives.

At present fifty-seven contract miners are employed in mining the coal and from them seventy cars of coal are obtained daily. However, a large portion of the coal comes from development or narrow work. Twelve 60-ft. chambers are being worked and two 100-ft. chambers have been started. Besides this, twelve narrow places or headings and airways are being driven. These do not include the narrow work in driving the roadways for the above mentioned two 100-ft. chambers. So out of fifty-seven men, twenty-four are doing narrow work and these do not include the men driving chamber necks.



ONE OF THE ROADWAYS IN A 60-FT. CHAMBER

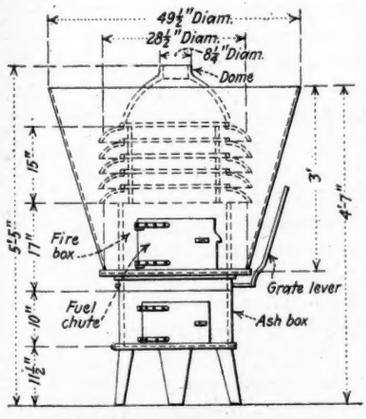
The road packing is shown along the left rib. A small 6-in. stringer is shown above the rock. This is sometimes loaded out. The coal is about 25 in. thick at this point.

An interesting feature in connection with the work is that when the small stringer of coal which lies above the fireclay roof reaches a thickness of 6-in. the miners try to shoot down the rock in such a way as to leave the thin coal undisturbed. After the rock is packed in the chambers they take down this coal and thus often gain a car of coal with a minimum of effort.

Sand Driers for Mine Locomotives

FOR the rapid drying of sand a petticoated furnace drier has been devised which brings almost every part of the sand in close contact with heated metal, reducing the distance through which the heat has to be conducted through the sand itself or convected among its interstices. Sand is a poor conductor of heat, cast iron a good conductor, and the series of "cones" or petticoats around the body of the stove carries the heat into the sand and gives increased capacity to the drier.

It is said that this stove will prepare for service one-half ton of sand in an hour. Smaller quantities, of course, can be dried with lower aggregate consumption of fuel and with less attendance than is needed where maximum output is sought. It is impossible to heat sand satisfactorily when it lies in a body 12 to 18 in. thick as it does in ordinary sand driers. This drier is made by the Roberts & Schaefer Co., Chicago, Ill., as is also the drier now to be described.

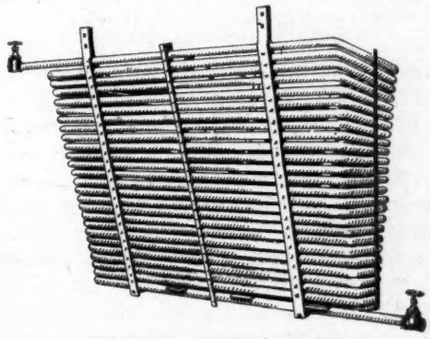


FURNACE DRIER WITH PROJECTING CONES

The petticoats or projections from the walls of the stove carry the heat to the sand and keep it in such a condition that heat can pass through it.

The Beamer steam sand drier is intended for wet sand. It does not work satisfactorily when relatively dry sand is fed to it. It consists of pipes bent to form the walls of a hopper. Through these steam is passed.

The moisture evaporated from the sand is allowed to escape directly into the atmosphere. This is said to prevent the pipes from rusting and the sand from forming into cakes. Where the moisture is held in a receptacle around the pipes they rust badly. This drier has a capacity of about one-third ton every hour.



HEATER MADE OF PIPE

Well suited to sand which is so wet that the pipe cage can hold it long enough to impart to it the necessary heat. Sand any drier than this would run through it almost unheated.

THE APPARATUS FOR APPLYING CEMENT MORTAR by means of compressed air, commonly known as the cement gun, offers great possibilities for the lining of passageways, etc., with concrete. By protecting from weathering the roof and walls of a passageway with a thin coat of cement, it is possible that the heavy expense of timbering in many cases may be avoided. The machine also offers possibilities of use in fireproofing of timbering, board stoppings, and in the erection of fire walls in places difficult of access, since the material can be pumped for a considerable distance.

What Can Be Done to Prevent Electrical Mine Fires

Charred Insulation Allows Current to Pass—Leakage vs. Short-Circuits as Sources of Ignition—How Motors May Cause Fires—Dangers from Exploding Oil-Immersed Switches—Need for Metallic Covering for Cable

BY A BRITISH CORRESPONDENT

IT WAS recently stated in a paper by W. V. King, of the West Virginia Department of Mines, that electricity was credited in the United States with causing during 1916 (the last year for which statistics were completed) 15,691 fires, entailing a loss of $20,780,307, and that destruction of property from this cause was increasing annually. Moreover, coal-mining plants were bearing their share of the burden, few standard electrical installations being found at collieries.

In view of these facts it seems possible that the development of the use of electricity in mines may later be retarded if means are not taken to effect a reduction in the number of such conflagrations. Of the two principal causes of electrical fires—leakage and overloading—the former undoubtedly is responsible for the greater number of these accidents. Of course, when one refers to leakage, the term may be taken to include short-circuits, although electricians generally differentiate between one and the other.

A short-circuit admittedly is a leakage, but it is an exceptionally heavy one, more or less completely localized and of short duration. On high-voltage systems it usually is attended by a report which in some cases might be termed an explosion, for it scatters red-hot metal and burning oil or insulation throughout its immediate vicinity. The redeeming feature of a short-circuit, however, is that it seldom occurs without attracting attention. Steps accordingly may be taken to cope with the fire that the short-circuit may occasion.

LEAKAGE IS REAL DANGER

The greatest danger from fire is not from the short-circuits themselves but from the leakage that is likely to occur prior to its development into a short-circuit. Leakage cannot be entirely eliminated from any system, however efficient may be its insulation. Moreover, the larger the system, the greater the leakage, as additions to a network of cables increase the number of possible leakage paths and reduce the aggregate resistance offered to leakage. This form of current loss is objectionable only because of its importance economically. Seeing that it is distributed over a large surface, radiation is sufficient to prevent a dangerous heating.

It is obvious that the more localized a leak becomes, the closer it approximates to a short-circuit and to the point where sufficient energy passes to cause the insulation or other inflammable material to ignite, although an actual short-circuit may not develop for some time. It is under these conditions that unexpected fires occur which may attain appreciable proportions before being discovered.

Closely associated with leakage as a problem is the pressure, or voltage, of the leaking equipment. In a mine, or indeed in any kind of installation, it is false protection to install low-pressure equipment with the idea that thereby the dangers from fire will be largely eliminated. Of course, with a low-pressure system the insulation is more easily maintained in a condition that will prevent leakage than with a high-voltage system, but as a rule when low-pressure equipment is installed the insulation often is neglected, partly because the danger from shock is considered unimportant but chiefly because an idea prevails that any condition of insulation not actually permitting a short-circuit is all that is required.

Electrical apparatus employed in coal mines nearly always is exposed to dampness. Conditions vary widely in different parts of the same mine. In some places apparatus may be exposed to dripping water, and in others, such as return airways, it may be subject to the action of a moisture-laden atmosphere, which is peculiarly destructive to insulation and is responsible for much surface leakage. This latter usually leads to serious results. Insulation sometimes becomes charred and thus rendered more conductive, allowing a larger leakage current to pass.

Thus the ill effects are cumulative, and surface leakage caused by dampness is responsible for a large percentage of electrical fires. Furthermore, leakage may be caused by neglect to examine the equipment installed and to repair promptly any defects that may develop. In many mines also, electrical apparatus is subjected to serious overloading. This is especially true of haulage equipment. Damaged roads and derailed cars are the most fruitful causes of difficulties, but, in addition, the number of cars making up trips frequently is in excess of the normal capacity of the equipment. It is often difficult to prevent persons responsible from exceeding the stipulated number.

ADEQUATE SUPERVISION NECESSARY

The whole matter of eliminating fire risks, given suitably designed apparatus, hinges upon adequate supervision and the maintenance of all equipment in good repair. The purpose of this article, therefore, will be to give a few practical suggestions as to the manner in which electrical apparatus may be kept in such condition as to avoid fire risks. To enable the ground to be covered properly these remarks will be divided under four heads, namely: Electrical machinery, control apparatus, cables, and grounding.

Electrical windings of all kinds require systematic attention if they are to be kept in good condition and free from fire risk. Undoubtedly, the greatest danger occurs when a short-circuit takes place in the windings of a machine that has been neglected. The dirt that usually accumulates in such places will be found to contain a large percentage of fluff, which is highly inflammable. In that event a spark will be sufficient to cause it to ignite. With a high-speed machine, the draft created by the rotation of the armature will quickly start a fire. Moreover, smoldering fluff is so light that it is likely to be scattered onto inflammable material or the dust by which the machine is apt to be surrounded.

Of course, systematic cleaning is the remedy, and this should be effected by means of compressed air wherever it is available. It is questionable whether the usual form of blower sold for this purpose is as effective as it might be. The volume of air is ample, but the pressure is insufficient to dislodge dust and fluff that may be sticking to the windings. However, this may be partly overcome by keeping the surface of the windings as smooth as possible by applying insulating varnish liberally at regular intervals. This, of course, in addition to facilitating cleaning also renders the windings proof against dampness.

Brushes and brush-holders, slip-rings and commutators are fruitful sources of leakage. This is mainly on account of carbon and copper deposits from the brushes collecting current from various parts of the machine. If left without attention, a continuous path will soon be formed along brush spindles and arms, and surface leakage will be set up, often with disastrous effects upon insulation, brushes and sleeves. Motors of the slip-ring type working below ground should always have their slip-rings inclosed in flame-proof enclosures, but thereby heat-radiation from heavily loaded brushes and holders often is impeded. Thus it is not uncommon to find high temperatures existing under such conditions, especially where carbon brushes are employed.

Combination Brushes Give Best Results

Much better results may be obtained by substituting for pure-carbon brushes a combination of graphite and copper. This gives a contact of a high conductivity and at the same time limits the temperature rise in both sliprings and brush holders to a few degrees above that of the surrounding atmosphere. This suggestion, for obvious reasons, does not apply to commutator brushes and holders, but a commutator usually can be kept at a low operating temperature by a judicious selection of brushes.

Many breakdowns both on alternating- and direct-current machines are caused by oil that has leaked from ill-designed bearings. The oily surfaces, whether on brush gear or windings, readily collect dust which eventually clogs air ducts and may form conducting paths over which electrical leakage may occur. In addition to this, dust may cause bad contact on slip-rings and commutators, and expose the latter to short-circuits between bars, with consequent damage to windings.

Oil leakages should be stopped at all costs, and no machine should be accepted from the makers if it suffers from this defect. Oil throwing may be traced to a number of causes. In the case of high-speed machines it is often brought about by excessive axial draft, especially in self-ventilated semi-closed or totally enclosed motors. Worn bearings and too much end play in many instances are the cause of oil throwing. Many remedies suggest themselves, but designs vary so widely that the steps to be taken must always depend on local conditions.

Under the heading of control apparatus falls the ordinary type of open knife switch, with the usual fuses as well as with enclosed, and oil-immersed switches fitted with overload release. It hardly need be pointed out that any form of open-type switch is objectionable in a mine whether gas is or is not likely to exist. There is always the possibility that sparks will be thrown off when a switch is opened under heavy current. Moreover, contact parts of open switches become oxidized and heating often results. This heating is not always confined to the switch but finds its way to terminals, causes oxidation of the various connections and sets up serious overheating, which may result in the ignition of the cable insulation if this consist of inflammable material.

Then there is the possibility that sparks from a blowing fuse will start a fire. This is a real danger when short-circuits occur. To insure safety all open-type switches should be amply protected in order to prevent sparks being thrown onto surrounding material and also to prevent their falling from the coverings which should always be installed to protect operators from shock. Such coverings should be lined with asbestos, and if they are of metal they should be efficiently grounded.

The switch contacts should be frequently cleaned and smeared with just a little vaseline to prevent oxidation. Fuses ought always to be of a type that does not lend itself to replacement by pieces of wire, which in many cases are inserted indiscriminately by unauthorized persons and which afford little or no protection to apparatus in circuit. Furthermore, fuses, where used, should be totally inclosed in a metal case, though ample ventilation should be allowed, for all fuses, if designed to give protection worthy of any consideration, normally work at a fairly high temperature. If too confined the current will cause heating at terminals and contacts and often the melting of solder from cable lugs.

It is unnecessary to open fuse boxes for daily examination. Once the temperature of a box, when working under normal conditions, has been ascertained, any rise in temperature arising from hot contacts or connections immediately will be made apparent by merely placing the hand against the fuse-box cover. Inclosed oil-immersed circuit breakers as a rule are exceptionally safe pieces of apparatus, especially when fitted with proper inlet and outlet terminals. The temperature of switch tanks should be noted frequently by feeling them with the hand. If they are found warmer than is normal, the cause of the increase immediately should be ascertained.

Overheated Switches Are Dangerous

The oil of high-tension switches working in moisture-laden air may become overheated as a result of moisture penetrating the liquid and lowering its insulating properties. In spite of their reliability, overheated oil switches are dangerous because of the possibility that gases may accumulate in the air space above the oil and be ignited. An accident of this kind may cause a serious explosion, throwing hot and possibly burning oil in all directions. However, this may be minimized by the use of suitable safety valves on all switches. Among the precautions necessary to eliminate fire should be mentioned that of seeing that these valves are kept in proper condition as well as providing such valves where the makers of the apparatus have neglected to do so.

In this connection an improvement recently has been made. Instead of providing a safety valve in the cover of a switch or transformer, spring bolts are substituted, allowing the covers, under an internal pressure of a few pounds per square inch, to overcome the spring tension on the bolts and to rise above ½ in. This will relieve any internal pressure caused by an ignition of gas within the apparatus. It is necessary, of course, that wide flanges be employed in order to provide a suffi-

ciently long cooling path to render harmless any hot gases escaping at the exterior of any apparatus as the result of an internal explosion.

The external portions of switching apparatus and especially that used underground should be kept perfectly clean. Accumulations of coal dust or other combustible matter around terminals always are a source of danger. Furthermore, equipment of this kind should be housed either in concrete or sheet-metal cubicles.

Overheated transformers are perhaps more dangerous than switching devices because of the large quantities of oil used, especially in connection with big units. It is well worth the slight expense involved to equip with fire alarms all transformers supplying light or power. Unlike the gradual heating of a switch, when developing trouble, a transformer may give extremely short warning. A serious ground, or the short-circuiting of one or more coils, will raise rapidly the temperature of the oil and in a short time will become a positive danger. Though transformer cases should be kept well filled with oil, so as to maintain at a minimum the air space above the liquid, care should be taken to prevent leakage. Not only does oil attract dust and make a transformer chamber dirty, but a mixture of coal dust and oil or accumulations of oily waste or wood provide ready fuel for a fire.

Cables Should Be Metal Sheathed

Undoubtedly cables and wires are responsible for large numbers of fires that occur at collieries, whether above or below ground. It is questionable whether any form of cable other than those provided with a metallic covering should be allowed to be used underground where the circuit to be established is in any way permanent. Mining conditions are so severe that a common rubber and braid covering is totally insufficient to give adequate protection. As a consequence, wires become exposed, workers receive shocks, fatal and otherwise, and occasionally short-circuits start fires, which may easily result in serious loss of life.

Rubber-covered cables may be readily abused. Difficulty may be experienced in keeping them properly fastened to the insulators and in preventing people from replacing broken twin lashings with pieces of wire which not infrequently cut through the insulation and become sources of positive danger. A rubber-insulated cable, of course, is convenient for supplying temporary connections for lights or portable machines. The covering is easily removed and temporary wires joined up, but upon removal of such connections it often happens that the bared portions of the cable remain uninsulated and eventually cause a bad ground or a short-circuit. Moreover, once ignited the insulation burns readily, and a fire quickly spreads.

However, for relatively permanent installations, rubber-insulated cable is still in use at collieries and it is desirable until this is worn out and discarded to minimize as far as possible the dangers of fire thereby resulting. When joined to apparatus, cables should reach the lugs from below and not be led downward from the roof. In this latter position their insulation readily forms fuel for a fire that may start as the result of a heated connection or arcing at the switch.

In transformer chambers and machine rooms, cables should be installed neatly, care being taken to keep high- and low-tension cables entirely separate. Unarmored connections to resistances and motors should have asbestos coverings and be kept free from oil.

Fires may be caused by inefficient grounding. Where a motor or transformer is left ungrounded and is surrounded by metal floor plates in contact with the frame of the apparatus, not only is there a possibility of the frame becoming live but also the floor. Instances have been known where metal floors, more or less insulated but in contact with motor frames, have been charged to an extent enabling large flashes to occur between them and any grounded metal work such as steam or water pipes.

Should such arcing take place in the vicinity of inflammable material a fire may easily result. Furthermore on systems operating with a grounded neutral one advantage of having all framework also grounded is that circuit breakers and other forms of protective apparatus operate with certainty in case of an insulation breakdown to earth.

In connection with the operation of coal cutters efficient grounding is more important than any other detail of installation because of the possibility of gas ignition by sparking in unexpected quarters. For instance, a coal cutter partly or entirely ungrounded may develop a leak to its frame and current be conveyed along its hauling rope to a compressed-air or water pipe with which it may come in contact. Flashing thus may take place, and an explosion may occur at an appreciable distance from the coal cutter which is really the direct cause of the difficulty. Similarly leakage may find a path to an isolated section of rails at the face, with results similar to those already referred to. It seems highly possible that many colliery explosions have been caused by leakage finding its way to ground at some distance from the actual source.

Conduit Wiring Is Preferable

Finally there is the danger of fire from electric lighting above and below ground. Perhaps nothing electrical about a colliery suffers more abuse than the lighting system, especially if this be composed of old-fashioned open wiring that enables unauthorized persons to meddle with the conductors. It is well known that such systems soon fall into a state of disrepair, the wires eventually leave their insulators and are fastened in all sorts of ways, more often than not in contact with timbers laden with coal dust. This kind of wiring constitutes a danger that should be obvious to anyone in charge of a mine installation and responsible for its safety.

All wiring, whether above or below ground, should be run in conduit unless some form of armored cable is employed together with suitable fittings. Lamps should be provided with guards to prevent their coming in contact with inflammable material. Little danger of this kind exists with the modern metallic-filament lamps, but those with carbon filaments, of which large numbers are still in use, constitute a serious danger.

In one instance of this kind a 32-cp. carbon lamp came in contact with a scaffolding plank at a screen. The wiring had become deranged and the lamp was actually lying on the plank, which was covered with coal dust. When discovered, a hole had been burned through the plank and the wood surrounding the hole was smoldering. Exactly how long it took to burn this hole through a 2¼-in. plank was not known, but this occurrence gives a fair indication of the heat generated by carbon lamps and serves as a warning to keep them out of the mine unless they are properly protected.

Coal Mining Institute of America's Biggest Session—I

One Brakeman Killed in Every Hundred and Twenty—New Constitution Adopted—Timber Preservation Makes Red Oak More Durable Than White—Staleness of Air Aids Breathing and Suggests Resuscitation Method

MUCH interest was occasioned at the meeting of the Coal Mining Institute of America held in the Chamber of Commerce Building, Pittsburgh, Pa., Dec. 13, 1922, in the powerful address of the President, Rush N. Hosler, and in his significant statements as to the dangers of mining. He prefaced these remarks with the maxim that "You must know the symptoms before you can diagnose and prescribe for the disease. In Pennsylvania we have gone further in analyzing coal-mining accidents than in any other state or county, as far as is known, with the result that we have been able to point out certain facts relative to accidents which, once known, should prove a stimulant to accident prevention in this state."

He then went on to say that "for every five employees in and around the mines in Pennsylvania one is injured every year severely enough to require medical attention, this injury being anything from a slight wound requiring a surgical dressing to the loss of a life.

"Another fact of special significance is that haulage operatives by actual count made in inspecting nearly 1,500 bituminous mines in Pennsylvania, though constituting only 10 per cent in round numbers of all employees at those mines, had in the six-year period, 1916 to 1921, 26.6 per cent of the accidents."

The author presents tables I and II, in which these accidents are tabulated in much detail. In fact Mr. Hosler gives here many details not available as regard the accidents in any other state and long sought by persons anxious to reduce haulage hazards.

TABLE I—CAUSES OF ORDINARY OUTSIDE FATALITIES ON MINE HAULAGE IN ALL BITUMINOUS MINES IN PENNSYLVANIA, 1916-1921

Cause of Fatalities	All	Place of Fatality: Power Plant	Tipple	Haulage	Plane	All Otheer
All	65	1	16	34	13	1
Wrecks	18	..	3	8	7	..
Collisions	2	..	1	1	..	..
Derailments	7	..	1	3	3	..
Runaway trips	9	..	1	4	4	..
Caug't by cars:—	37	1	10	20	5	1
Falling from	9	..	..	8	1	..
Getting on or off	5	..	1	3	1	..
Braking or spragging	4	..	2	2	..	..
Coupling	3	..	1	2	..	..
Throwing switch	2	..	1	1	..	..
Pushing car	7	..	4	1	2	..
Working on track	2	..	..	..	1	1
Walking on track	5	1	1	3	..	..
Squeezed—Scant clearance	2	..	1	1	..	..
Falling from—not run-ov r	3	..	1	2	..	..
Pushing cars—Hernias	2	..	1	..	1	..
All others	3	..	..	3	..	..

TABLE II—CAUSES OF ORDINARY INSIDE FATALITIES ON MINE HAULAGE IN ALL BITUMINOUS MINES IN PENNSYLVANIA, 1916-1921

Cause of Fatalities	All	Place of Fatality: Slope	Entry	Room Neck	Working Place (Entry)	Working Place (Room)
All	609	32	473	43	17	44
Wrecks	248	19	180	19	9	21
Collisions	50	3	43	1	1	2
Derailments:	140	7	107	14	1	11
Knocking out props	30	1	17	6	..	6
While on motor or trip	81	4	69	4	1	3
Working on track	7	..	5	..	..	2
Walking on track	16	2	10	4	..	..
Throwing switch	6	..	6	..	..	..
Runaway trips:	58	9	30	4	7	8
While on motor or trip	22	2	17	..	1	2
Working on track	3	2	1	..	..	..
Walking on track	18	5	12	..	1	..
Car running into working place	15	..	..	4	5	6
Struck or run over—not wrecks	188	11	159	9	3	6
Falling from	35	..	35	..	..	..
Getting on or off	46	4	41	..	..	1
Braking or spragging	15	1	14	..	..	..
Driving—on foot	8	..	7	1	..	..
Coupling	14	1	12	1	..	..
Throwing switch	8	..	8	..	..	..
Opening door	7	..	7	..	..	..
Pushing car	15	..	5	5	1	4
Working on track	4	..	4	..	..	..
Walking on track	31	5	25	1	..	..
Cleaning sand pipes	2	..	1	1	..	..
Squeezed at face-loadings	3	..	..	..	2	1
Squeezed between car and rib	122	1	94	12	5	10
Riding motor trip	20	..	17	..	2	1
Getting on or off	14	..	12	1	..	1
Braking	13	..	9	2	..	2
Driving—on foot	14	..	12	..	..	2
Coupling	11	..	10	1	..	..
Throwing switch	4	..	4	..	..	..
Opening door	5	..	5	..	..	..
Pushing car	23	..	10	7	3	3
Working on track	3	..	3	..	..	..
Walking on track	15	1	12	1	..	1
Miscellaneous Haulage	51	1	40	3	..	7
Squeezed between trips—partings	3	..	3	..	..	..
Struck by haulage rope	2	1	1	..	..	..
Car hoist or crab	2	..	..	1	..	1
Caught between car and roof	15	..	14	1	..	..
Trolley pole	5	..	5	..	..	..
Cars—derailing	9	..	4	1	..	4
Cars—pushing	3	..	1	..	..	2
Horses and mules on haulage	10	..	10	..	..	..
All others	2	..	2	..	..	..

"These figures are the more striking," said Mr. Hosler," "when it is stated that they show that one employee in every 250 engaged in haulage is killed each year and that annually one brakeman and trip rider

NOTE—Frontispiece shows the visitors from the Coal Mining Institute of America at the Springdale plant of the West Penn Power Co. About seventy-five attended this part of the program, which concluded the annual session. Relatively only a handful remained for this last day's proceedings, the main meeting being more largely attended than any that had preceded it. The plant being near Pittsburgh many of the members had already visited it.

in every 120 engaged in that work likewise is killed." Mr. Hosler concluded with a strong appeal that the owners of mines exhibit an increased sense of their obligation of affording safety to the men they employ.

Stating that the bank balance was $2,407.82, the expenses $2,005 and the net balance $402.82, excluding $1,000 in Liberty Bonds, the secretary-treasurer, H. D. Mason, Jr., declared that by inducing old members to renew their pledges a debt of $1,253 at the beginning of the year had been wiped out and replaced by a substantial balance.

Sixty-five per cent of the membership, or 1,323 members, were in full standing for 1922. There were 1,603 members at the beginning of the year and 2,033 at the close, that is 430 new members were received during the year. The secretary reported the deaths of E. A. Bailey, J. S. Caslin, E. H. Downey, Charles L. Fay, Samuel T. Oldham, F. S. Peabody, E. C. Northover, G. J. Salmon and J. G. Smythe.

Richard Maize Made Institute President

Richard Maize, mine inspector at Uniontown, was elected president. Nicholas Evans, mine inspector of Johnstown; R. N. Hosler, retiring president of the institute, of Harrisburg and W. E. Fohl, consulting engineer, of Pittsburgh, were chosen vice-presidents.

The following additional executive committeemen were elected: A. R. Pollock, Curtisville, Pa.; Frank Hall, Harrisburg, Pa.; M. D. Cooper, Pittsburgh, Pa., and John I. Pratt, Pittsburgh, Pa. H. D. Mason was re-elected secretary-treasurer. The new constitution was adopted by a vote of 195 yeas to 6 noes.

Silas S. Riddle, chief of the bureau of rehabilitation, Department of Labor and Industry of Pennsylvania, read a paper on "The Rehabilitation of Injured Mine Employees" and urged that all coal companies try to find places for men who are injured. He pointed out that sometimes by shifting an injured man from one easy job to another it might be possible to find work for a man who could fit only a place where the work was exceptionally easy. Thus at one mine where the foreman believed that all the jobs for disabled men had been filled, a man with a wooden leg who had been bell ringing at the shaft was made a motor runner, and the bell ringing was handed over to a man who was even less fitted for active work.

He said that his bureau was not equipped to give assistance wherever needed. In fact it had a total appropriation for all industries of only $50,000 a year and yet there were 140,000 injured annually in the industrial plants of the State of Pennsylvania. The bureau could not offer even to find mechanical limbs for the injured. Not only were there 140,000 injured a year but there were injuries of previous years, to say nothing of those that predated the establishment of the bureau.

W. L. Affelder said that the wish to employ injured men, especially those injured in other works, was halted by the fear that another injury might put the man into the totally incapacitated class and cause the company by whom he then was being employed to pay the large indemnity that goes with total incapacitation instead of the smaller sum that would be paid for the secondary injury if that were the only one sustained. For this reason many companies refuse to employ men who have been injured at the mines of other companies.

Mr. Riddle replied that when a man who has lost one eye is employed by a company and then in their employ loses the other eye he is compensated as if he had been possessed of two eyes and had lost but one. This causes the man to lose full compensation for his disablement, but it is thought better to do this than to bar the man from employment by establishing a principle that would be unfair to the employing company. New York State and Minnesota have special funds to take care of such cases.

In reply to Nicholas Evans he said that the 400 men who were aided by the rehabilitation bureau had expended on them an average of $195. The act did not limit the age of recipients. The requirements of the act forbade the giving of this class of help to aged, helpless, feeble-minded or epileptic persons. Their recourse was to the recognized provisions for assistance. Any man injured at work who can profit by rehabilitation is entitled to help if the bureau is financially able to afford it. The bureau is not a relief organization. Furthermore, it should not undertake to prepare for clerical jobs men whose education has been neglected in youth.

After the noon recess N. S. Greensfelder, of the Hercules Powder Co., showed pictures of strip-pit mining at the William Penn Colliery, of the Susquehanna Collieries Co. The cover at the point shown was about 15 ft. deep, but it was explained that it was deeper further in. It was stated that this was the reason why distant-removal stripping was used as against casting stripping, but one cannot help questioning why, where there is much stripping to be done, casting should not be adopted up to the point where the cover is 40 or 45 ft. deep and distant-removal stripping be used thereafter. Of course if the pit is short and the lightly covered material not wide the large shovel would prove uneconomical, as the cost of setting it up is considerable.

The illustrations showed the lacing in of Cordeau Bickford, the method of attaching side fuse lines to the main lines by simple cutting and wrapping and the exploding of the charges. It was explained that the cordeau has a speed of flame propagation of 17,500 ft. per second and so will explode several holes almost instantaneously. The dynamite is dropped in the holes and tamped with coal dust by a wood dolly. It is said that the cordeau is more rapidly connected than electric wiring, can be safely shipped by express and is economical of explosive.

Not Deep Cut But High Pile Is Troublesome

At the close of Mr. Greensfelder's remarks, S. A. Taylor delivered an address on bituminous strippings, saying that the operation of a casting stripping was limited not so much by the depth of cut as by the height of the dumped ground. A 40-ft. cut will make a 65-ft. fill, and it takes a big shovel to deliver material at such a great height above the ground.

Mr. Taylor remarked that alfalfa was now being planted on stripped areas and showed a picture exhibiting how luxuriant was the growth where this was being done. It was necessary to prepare the surface by the planting of clover. The fact that strippings thus can be utilized will do much to meet objections which farmers have advanced against this method of mining.

The question box was opened by Nicholas Evans in place of W. E. Fohl, who was unable to be present. F. W. Cunningham responded to Question 1, as to the most important point to be considered when entering a mine after an explosion. As might be expected, the query did not submit to any satisfactory answer. Mr. Cunningham said that after the fan had been started,

the party should go in as far as the first crosscut and then, before admitting the air any further, should explore thoroughly the area that the air would have to traverse to see whether any fire could be found therein. Some mines were known to be peculiarly subject to second explosions, but by care to explore all places before ventilating them this fatal defect might be avoided.

Richard Maize, Jr., stated that it was safe to go as far as the air already was circulating at the time the mine was entered, but any further progress must be made with care and as Mr. Cunningham had indicated. To Joseph Knapper the most important matter was to see that all the reliable men were not taken into the mine. He urged that the man who is left with the fan also must be reliable. At the Cherry disaster the man in charge of the fan reversed it and turned the bad air onto the explorers and thus asphyxiated them.

Question 2, as to the methods of stream pollution, was not discussed and question 3 brought some discussion from those who had mined coal and visited coal mines in the anthracite and western bituminous regions but nothing of any detailed character. It was obvious that mining men from the bituminous fields of Pennsylvania were not the most well-equipped men to discuss the mining of coal 30 ft. or more in thickness and on a grade of 30 deg.

N. S. Greensfelder, of Wilmington, Del., was called on to discuss the methods of electric shotfiring and presented the paper he had prepared for the American Institute of Mining and Metallurgical Engineers. J. S. Burton, of Clarksburg, W. Va., said that electrical methods of shotfiring were safer than those with the use of fuse but somewhat more expensive. With electrical caps there was greater certainty that the shot would go off and, moreover, it goes off promptly, saving for shoveling the time spent in waiting for the fuse to ignite the charge.

Avoid Danger of Synchronous Shots

M. D. Cooper related a case where two rooms were being driven up. Both were in about 50 ft. The men lighted shots with fuse at approximately the same time. Both men came out to the entry and awaited the result. A shot went off. Both of the men believed it was his shot and after a brief delay went in to see what had happened. One of the men whose shot had been delayed arrived just in time to receive the force of the blast, and a death resulted.

Mr. Cooper stated that this would not have occurred with electric shotfiring if only one battery had been provided. Mr. Maize added that even if each man had a battery and both fired at the same time, there could be no risk, for the men would disconnect their batteries before examining their places, and an explosion could not occur. Mr. Cooper urged that owing to strikes inexperienced men entered the mines and the safest method of operation was to employ shotfirers. If the law of Pennsylvania relative to that matter were lived up to there would be no accidents.

Mr. Maize said that electric shotfiring was the surest way of eliminating the short fuse and its dangers. The use of any fuse but electric is to be condemned. It was urged that the dry-cell battery be done away with. Mr. Greensfelder said that the battery approved by the U. S. Bureau of Mines cost $18, and Sim Reynolds said that the price was too high if every miner had to be provided with one.

W. C. Hoyt responded to the question as to the best practical method of preserving timber and said that the best of all equipment, the pressure chamber, was too expensive for a single mine. Large timbers could be brushed, and smaller material should be immersed. He showed lantern slides of this class of work.

W. L. Affelder said that when putting in a coke-loading machine he had given half the ties a brush coat of Carbolineum. After seven years, twelve ties were taken out. Six that had not been coated were "rotted to the last possible degree" whereas six which had been treated were in splendid condition. What was more the untreated ties were white oak and the treated ties red oak and hence in themselves less durable.

Treat Timber Where Long Life Is Sought

It was now the accepted practice of the Hillman Coal & Coke Co. to give protective treatment to all railroad ties and to all ties used in the mines except where they are employed in the rooms. All structural material hereafter will be treated with a preservative. It is the intention to brush coat the large and dip the small material.

Dr. Yandell Henderson then described his experiments into the effect of oxygen and carbon dioxide in resuscitation made possible by a grant from the American Gas Association. As a result of this investigation he had designed an inhalator which was equipped to administer oxygen to which 5 per cent of carbon dioxide has been added. Carbon monoxide has three hundred times as much affinity for the hemoglobin of the blood as oxygen and when breathed in even small quantity will displace the oxygen in the circulatory system. Apparently carbon monoxide has no effect on the nervous system. Its action is secondary through asphyxiation or, as it might be termed, lack of oxygen.

A person supplied with pure oxygen does not show an ability to breathe it if his respiration has been impaired yet a man asphyxiated by carbon monoxide needs to breathe more heavily than another, for he must rid his blood of the poison. It is carbon dioxide, and not oxygen, which stimulates breathing. It is only when we are in stale air or have stale air in our lungs that we are disposed to breathe.

In Dr. Henderson's experiments six dogs were asphyxiated with carbon monoxide. Three were given pure oxygen. Two of these were revived and one died. The recovery was slow, however, and uncertain in the case of those that were revived. Three were given oxygen mixed with 5 per cent of carbon dioxide. In two minutes the animals began to breathe rapidly.

After that Drs. Henderson and Haggert experimented on themselves and the two tests they made showed the excellent effects of the combined oxygen and carbon-dioxide treatment. Carbon-monoxide poisoning causes a severe headache, but with this treatment the pain is much reduced. The inhalator is arranged so that 6 or 7 liters of air is provided per minute at the start. As the patient becomes stimulated to deeper breathing the valve is opened till at last 30 liters of air is drawn in.

This is about the limit desirable. It is not well to allow the patient's breathing to be stimulated by too much carbon dioxide, so a valve is arranged to open and give him natural air, which reduces that stimulation and slackens the breathing. Dr. Henderson added that he had gone on the emergency ambulance to attend fifty or sixty cases of asphyxiation by artificial gas. Among these were at least a dozen that were badly gassed, yet all responded rapidly to the treatment.

Problems of Operating Men

Edited by James T. Beard

Humidifying Mines Operated on the Exhaust Principle of Ventilation

Use of Steam Not Confined to Blowing System of Ventilation—Mine Must Be Suitably Planned When Exhaust System Is Employed—Changes Required

REFERRING to the suggestions of James Asheworth, mining engineer, contained in his letter, *Coal Age*, Sept 28, p. 497, in which he requests further information and data regarding the humidification of a mine, as described in my previous letter, I regret being unable to give the succinct figures he desires. What figures I have are disconnected and seldom bear any relation to each other.

In my study of the subject, what has interested me more has been the practical side of each separate case, rather than the theoretical aspect of the matter. The problem seldom required my retaining the notes taken, longer than to complete the task in hand. To publish these rambling notes and figures would interest no one.

Although it might have been brought out more clearly, it is quite evident that my previous article had reference to the blowing system of ventilation. In one place, I stated that, in all cases where the fan is a blower, exhaust steam turned into the ventilating current will do all that its advocates claim. Also, the illustration given shows the fan installed exclusively as a blower.

Humidifying in Exhaust System

Although the question of humidifying a mine in the exhaust system of ventilation presents greater difficulty than in the blowing system, owing to the use of the intake roads for haulage and as travelingways, it must not be assumed that the use of steam for this purpose is confined to mines ventilated on the blowing system.

Many operators partial to the exhaust system, have arranged their ventilating apparatus so that the air current can be reversed in the mine. As long as warm weather lasts, the fans are run exhausting; but, in the colder seasons, the circulation is changed to the blowing system, in order to permit the use of steam to humidify the intake air.

Even in old mines, it will generally be found possible to introduce the steam into the intake air in such a manner as not to interfere with the haulage of the coal or the use of travelingways by the men. In order to make this clear, I have introduced a plan of an old mine ventilated on the exhaust system, showing the changes that were made to enable the introduction of steam in the intake air, without materially interfering with the haulage requirements.

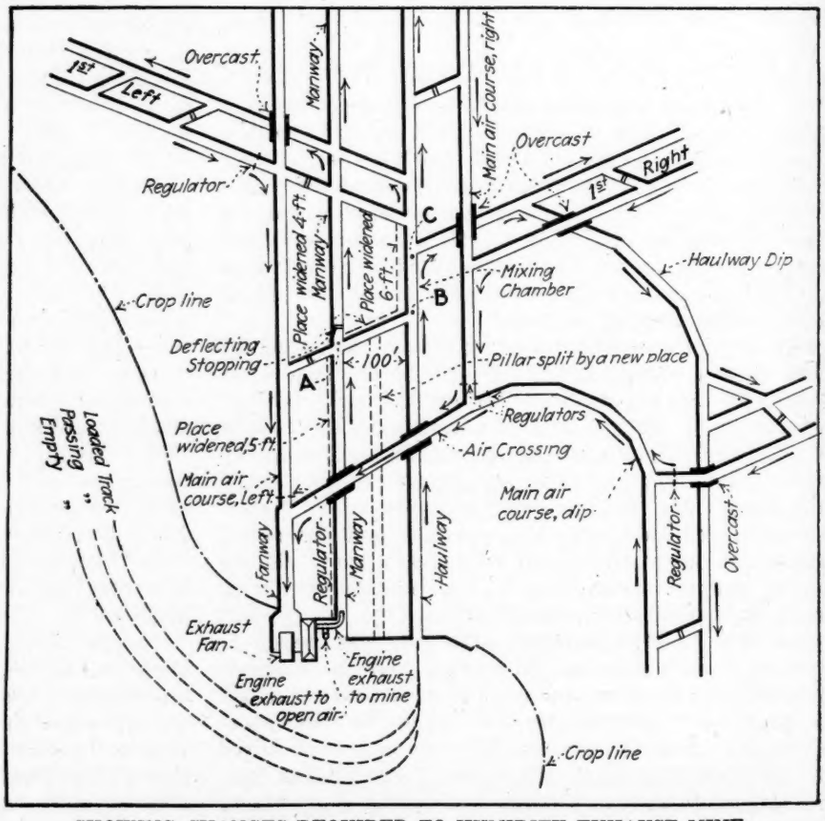
Present Arrangements in Mine

In this mine, the main headings were driven four abreast. The two center headings were used as a main haulage road and manway, respectively, while the two flank entries served as return air-courses for the two sides of the mine. In order to cut down the ever-mounting cost of ventilating the mine, it was finally decided to utilize the exhaust steam of the engine to moisten the mine air.

It was first thought to make arrangements that would enable the air current to be reversed at times when it was necessary to humidify the air. The estimated cost of making this change was so high, however, that the scheme was abandoned for the time. It was then determined to experiment by introducing the steam into the manway, which was temporarily abandoned as a travelingway.

Changes Made as Result of Experiments in Mine

A stopping was first built in the manway, 5 or 6 ft. inby of the point *A*. The air entering the manway was thus deflected through the crossover to the haulage road, at *B*. By this change, the total volume of air entering the mine was reduced from 119,800 cu.ft. per min., to 114,300 cu.ft. per min. Formerly, 47 per cent of the air traveled the manway, and 53 per cent, the haulage road. After building the stopping at *A*, only 44 per cent of the air entered the manway and 56 per cent traveled the haulage road. Practically, all of the loss thus occurred in the manway, and about the same volume of air entered the haulage road as before.



SHOWING CHANGES REQUIRED TO HUMIDIFY EXHAUST MINE

The change made it a little breezy on the haulage road, from *B* to *C*, where the total volume of air was passing. However, the men soon learned not to light their lamps until after they had passed this portion of the road. Both the haulage road and the manway were electrically lighted, so that no individual lights were needed there.

Temporary piping was now installed to conduct the exhaust steam of the engine into the manway. When that was done, the men traveled the haulage road as far as to *C*. It had been feared that the moist air coming from the manway would make the haulage road, from *B* to *C*, too wet, hot and foggy, for comfort. There was no fog, however, and one could stay at that point, for an hour, without being wet. Indeed, one could travel the crossover, from *B* to within 15 or 20 ft. of *A*, proceeding against the steam-laden air without feeling discomfort.

Continuing the Experiment

The next step, by way of experiment, had for its object increasing the percentage of air traveling the manway, so as to secure a greater effect in the humidification of the workings. To that end, a wooden brattice was built at the entrance of the haulage road, so as to leave only sufficient room for the cars to pass and about a foot of headroom above the locomotive.

The effect of this obstruction on the haulage road reduced the total air volume entering the mine to 96,700 cu.ft. per min., of which 78 per cent, or 75,400 cu.ft. traveled the manway. It was then found possible to walk to a point 20 or 25 ft. outby from *A* and facing the steam-laden air current entering the manway.

Naturally, these changes increased the water gage at the fan, the increase being from 1.67 to 1.81 in. Contrary to expectation, the increased velocity of the air in the manway did not lengthen the distance required for the complete absorption of the steam by the air current. Instead, this distance was shortened by at least 50 feet.

Moreover, owing to the increased water gage, the work performed by the engine was increased and more steam was discharged into the manway and at a higher temperature. During a whole winter, the mine was operated on this plan with very satisfactory results in respect to the moistening of the dust. The total circulation, however, having been reduced from nearly 120,000 cu.ft. per min. to something less than 97,000 cu.ft. per min., caused a natural scarcity of air in the wet dip workings.

Restoring Loss in Circulation

Finally in order to restore this loss of volume and, at the same time, provide a new manway, so that the men would not be compelled to travel the haulage road, an entry was driven in the pillar, between the haulage road and the old manway, as indicated by the dotted lines in the accompanying figure. Also, as indicated by dotted lines, the old manway, the crossover and a portion of the main haulage road to the first left headings beyond *C* were all widened. These changes had the desired effect of increasing the total air volume to 121,700 cu.ft. per minute.

During the very cold winter of 1917-18, the engine, running at its normal cutoff, failed to supply sufficient steam to warm and moisten the air entering the mine. This difficulty was overcome by lengthening the cutoff to 85 per cent of the stroke, which made it necessary to fire the spare boiler and employ an extra stoker in the daytime. Even then, it was estimated that the cost was far less than by sprinkling.

New York City. F. C. Cornet.

Gas Menace in Mines

Seeking a reliable test for safety lamps —Disadvantage of the carbide test— Few collieries equipped for testing lamps—Bumps and gas.

WHEN reading two recent letters in *Coal Age*, Nov. 9, p. 760, one by a fireboss, relating to the testing of safety lamps with a carbide lamp; and the other by a mine foreman, treating on the subject of bumps in coal mines, I was particularly impressed with the menace of the presence of gas, in the mining of coal.

In all matters pertaining to safe mining, nothing is more useful than the personal experience of men who are in constant daily touch with dangers that must be guarded against if they are to be avoided.

Explosive Mixture Must Surround Lamp as in the Mine

Probably the most important matter pertaining to safety in coal mining has to do with the presence of gas in mines. The seeking of a reliable test, to demonstrate that a safety lamp is in proper condition to be taken into a mine, is a matter that should interest all engaged in that industry.

The carbide test, described by the fireboss just mentioned, is doubtless a severe one if properly applied. However, at a large mine where there are, say a thousand lamps to be tested, it would be practically out of the question to attempt to follow such a plan with each lamp. Too much time would be required for making the test.

In my opinion, moreover, the explosion of the acetylene gas within the lamp would have to be very violent, in order to pass flame under a loose washer beneath the glass of a Clanny lamp. The violence of the explosion would cause flame to pass through the wire gauze, before revealing the loose washer under the glass.

What is needed is not such a violent explosion within the lamp, but rather a condition that corresponds more closely to what is attained in the mines where the lamp is liable to be exposed to an atmosphere of gas completely surrounding the lamp.

Desirable as it is to have a reliable test that will demonstrate the fitness of a safety lamp, before it is taken into the mine, I regret to say that few collieries are equipped for making such a test in a practical manner. For that purpose, the lamp should be immersed in an explosive mixture contained in a box or small chamber having a glass window to observe the effect of the gas on the lamp.

At one large, up-to-date colliery, I found such a testing chamber that had been arranged but failed to serve the purpose intended, as the lower air ring of a Wolf lamp placed in the box was not exposed to the gas. The gas for testing lamps was taken from the city gas mains.

Gas May Follow Bumps

Before closing allow me to refer to the second feature of the letter mentioned. Speaking of bumps occurring in mines, the mine foreman who wrote the letter makes no reference to the outbursts of gas that may accompany or follow the bumps.

While bumps in mines are dangerous, they are far less so than many outbursts of gas that have occurred. In some instances, the outburst has thrown down tons of coal and filled the mine passageways with gas and suffocating dust.

In addition to the useful information contained in that letter, it would be interesting to learn if this correspondent has ever experienced these serious bumps, in operating a mine worked on the longwall system. It would also be interesting to know if there were any faults in the immediate neighborhood of the mines where the bumps occurred.

In the same connection, let me suggest the practicability of stowing of waste in the worked-out portions of mines, by the hydraulic process, which some may style "flushing." Such a stowing of mine waste might prove an effective means of eliminating both bumps and such outbursts of gas as I have mentioned. M. E.

Alberta, Canada.

Investigation of Mine Explosion Criticised as Incomplete

Vancouver Island explosion killed eighteen men—Investigation by special commissioner—Report criticised as not being thorough—Cause of ignition assumed.

CAREFUL study of the report of the fatal explosion that occurred in No. 4 mine of the Canadian Collieries (Dunsmuir) Ltd., at Cumberland, Vancouver Island, as given in *Coal Age*, Oct. 26, p. 669, appears to provide ample food for thought. The report was made by former Chief Inspector of Mines George Wilkinson, who was specially commissioned by the minister of mines to investigate and ascertain, if possible, the cause of the explosion and make any recommendations that he might deem advisable. Notwithstanding Mr. Wilkinson's previous acquaintance with the mine, his report as to the causes of the ignition does not appear to be convincing. In one of the concluding paragraphs, as

given in *Coal Age*, he states: "There were only two possible sources of ignition; one the arcing of the electric circuit, and the other, flame from the explosive in the shot."

The mine is said to be an old one that presented special difficulties in the way of ventilation, having been operated for thirty years or more. The explosion occurred in a portion of the mine known as the longwall district, off No. 20 East Level, No. 2 slope. No blasting of the coal was permitted in this section, and explosive (monobel) was only used in lifting the bottom rock where it was exceptionally hard.

About seven years ago, electric coal-cutting machines were installed to mine the coal. The type of machine employed was the Sullivan, alternating-current, chain coal cutter. It appears that the trailing cable, carrying power to the machine, was connected with the terminal of the main circuit just below a cavity in the roof on the righthand side of the roadway. To further complicate the situation, an explosive atmosphere was said to fill this cavity in the roof.

Attention Drawn to Points That Require Close Study

The report is quoted as stating: "A shot had been fired in the floor of this place; and it was almost simultaneous with the firing of this shot that the explosion occurred. A rock flying from the shot had come in contact with the trailing cable with sufficient force to break the insulation and bare one wire, and had also torn one of the three connecting wires from the socket where they were connected with the main circuit. The shot had done its work well."

Much gas is made in this section of the mine, chiefly owing to the breaking of the roof up to a small seam of coal, about a foot in thickness and lying 15 ft. above the roof line of the seam worked. It is stated that the fireboss's report showed that explosive gas was found in small quantities in No. 3 level and other places in that vicinity where a ⅜-in. gas cap was obtained at the roof.

Mr. Wilkinson described the occurrence as being more in the nature of an inflammation rather than an explosion of gas. The distance the flame traveled was not great; but, passing up the longwall face, the coal being thin, there was no opportunity for the men to escape, which explains the large fatality by burning.

Taking these several conditions into consideration, it would seem that there are many points to be settled before one can arrive at a satisfactory conclusion regarding what took place at the moment the explosion started. For example, there are three elements or contributing factors in the case; namely, the arc assumed to have occurred when the wires were broken; the presence of an explosive mixture of air and gas in the cavity of the roof; and, lastly, the firing of a shot in the bottom beneath this cavity.

It is hard to accept with any degree of assurance that the breaking of the power wire caused an arc of sufficient intensity and duration to ignite a gaseous mixture, if such was present at the point where the break occurred. Unfortunately, the voltage of the current is not given. It might be assumed that the explosion of the shot disturbed the gas in the cavity of the roof and brought it down to where it was ignited by the supposed arcing of the wires broken when the shot was fired. However, all this must remain as pure assumption, since even the location of the socket where the wires were broken is not given, or its distance from the cavity where the gas was located.

All Contributing Factors Should Be Made Known

In an investigation of this kind, all the factors bearing on the occurrence, especially those on which the conclusions are based, should be clearly stated. In the same connection, it would be interesting to know what indications were found that warrant the conclusion that an arc occurred and that the gas was ignited by that means.

Speaking of monobel, it should be known that this is not wholly a flameless explosive. Is it not true that this explosive, though on the permitted list, has been the cause of previous mine disasters in British Columbia? Instances have been reported where shots of monobel, fired in mines of this province, have produced a windy shot, part of the charge having been thrown from the hole and burned in the open air, in the workings.

In the present instance, has it been established that the shot, fired beneath the cavity in the roof, where gas had accumulated, was not overcharged with the explosive; and, if that was the case, what might be expected to be the result of such an overcharge? What is the evidence that the shot was a good one, as stated in the report; and, on what ground is it stated, "the chances that any flame resulted are remote?"

Finally, the Coal Mines Regulation Act of British Columbia provides for the circulation of sufficient air to make the mine safe for work. In this regard, also, it would be interesting to know how much of the 22,000 cu.ft. of air, mentioned in the report, was passing under the cavity, in No. 4 level, and how far it had traversed the workings before reaching that point.

Inasmuch as gas was known to fill this cavity in the roof, why was not a hurdle brattice erected to clear the cavity of gas, before the shot was fired? I would suggest that the Mines Regulation Act regarding "adequate ventilation" and the permitted list of explosives might well receive careful revision.

MINING ENGINEER.

Livingstone, Alta., Canada.

Inquiries Of General Interest

Difficult Ventilation Question Asked in Mining Examination

Increase of Volume Due to Addition of Airway—Dispute as to Correct Solution—Tandem Circulation Through Shafts and Airways by Splitting

KINDLY permit me to submit a question said to have been asked at an examination of candidates for mine foremen's certificates of competency in one of the states. My copy of the question reads as follows:

QUESTION—*If an air volume of 10,000 cu.ft. per min. is passing through a mine in a single current, the resistance of the shafts at that time being equal to the resistance of the mine, what extra quantity of air will pass through the mine by adding another airway of the same length and area, the power remaining the same? Assume each shaft is 6 x 6 ft. in area and 500 ft. deep and that they are connected at the bottom by an entry 6 x 6 ft in area and 1,000 ft. long.*

This question has started a dispute, in our class, as to its correct solution. It is quite generally supposed that the addition of a second airway means the division of the circulation in the mine into two equal splits. But, even then, the results obtained range from 12,000 to 15,000 cu.ft. per min.

STUDENT.

Joffre, Pa.

The question is an interesting one but too difficult for submission to candidates in examination. The solution would be comparatively simple if it involved only the equal splitting of the air passing through the mine; but that is not the case. The same air volume must pass through the two shafts in a single current.

While there are other methods of solution, probably the simplest is by the potential. In that method, the first step is to calculate the relative mine potential, in each case, and the quantity of air passing, under a constant power, will then be proportional to the potential. In the first case, the total rubbing surface of the two shafts and one airway is $s = 2\ (6 + 6)\ 2{,}000 = 48{,}000$ sq.ft.

and the area $a = 6 \times 6 = 36$ sq.ft. The relative power potential is therefore

$$X_1 = \frac{a}{\sqrt[3]{s}} = \frac{36}{\sqrt[3]{48{,}000}} = 0.9906$$

When a second airway is added of the same size as the first, we assume the air is split at the bottom of the downcast shaft and passes through the mine in two equal splits, before reaching the upcast shaft. This makes a tandem circulation in which the total air volume passes, in turn, through the two shafts, and the two airways. For the two shafts, in series, the area is $a = 36$ sq.ft., and the rubbing surface, $s = 24{,}000$ sq.ft. For the two airways, in parallel, $a = 2 \times 36 = 72$ sq.ft.; and $s = 48{,}000$ sq.ft.

To find the general mine potential in tandem circulations, first find the reciprocal of the cube of each potential division; thus

Two shafts, $\frac{1}{X^3} = \frac{s}{a^3} = \frac{24{,}000}{36^3} = 0.5144$

Two splits, $= \frac{48{,}000}{72^3} = 0.1286$

Then, adding these reciprocal cubes, the reciprocal of the cube root of their sum will be the required general potential of the circulation; thus

$$X_2 = \frac{1}{\sqrt[3]{0.5144 + 0.1286}} = 1.1586$$

Finally, since the quantity of air in circulation, for a constant power, is proportional to the mine potential, and an air volume of 10,000 cu.ft. per min. is circulated against a potential of 0.9906, the volume (x) circulated by the same power against the potential 1.1586 is,

$$0.9906 : 1.1586 : 10{,}000 : x$$
$$= 11{,}696 \textit{ cu.ft. per min.}$$

Examination Questions Answered

Indiana Firebosses' Examination, Indianapolis, 1922

(*Selected Questions*)

QUESTION—(*a*) *Give a full description of a safety lamp.* (*b*) *What are its essential characteristics?* (*c*) *In What condition and under what circumstances may a safety lamp be unsafe?*

ANSWER—(a) A safety lamp, for general use in coal mining, consists of a brass or steel oil vessel surmounted by a chimney composed of a glass cylinder above which is a cylindrical wire gauze slightly tapered toward the top where it is reinforced by a gauze cap, that being the point most quickly heated and, therefore, more liable to pass flame than any other portion of the gauze. The entire chimney is held in position by upright standards firmly atttached to the oil vessel below and connected above by a brass ring or shield to which the handle of the lamp is attached. The burner is designed to hold a round or a flat wick, as desired. In most lamps, a steel rod is made to pass up through the oil vessel and serves as a pricker for raising or lowering the wick. It is also used to clean the wick of any crust that may be formed in burning. Some lamps, particularly those burning a light volatile oil giving a flame that is readily extinguished, are equipped with an igniter, or spark plug, for relighting the wick when extinguished.

(b) The essential characteristics of a safety lamp are, the isolation of the flame of the lamp from the atmosphere with which it is surrounded. The gauze forming the chimney and that protecting all openings for the admission of air to the lamp, while permitting the free passage of air and gas, prevents the passage of flame by the cooling effect of the wire gauze on the small streamlets of gas-charged air passing through the mesh.

(c) A safety lamp is never safe when handled by an incompetent or ignorant person, or when carelessly handled by another. The lamp is not safe when the gauze has been injured, or is otherwise defective by reason of grease or dirt, particularly dust; or when the gauze has become heated by too long exposure to gas; or when the lamp is improperly assembled or any part omitted.

QUESTION—(*a*) *Describe in full your whole procedure in the inspection of a gaseous mine.* (*b*) *What unsafe conditions would you observe other than the presence of firedamp?*

ANSWER—(a) Before entering the mine, the fireboss must have properly examined, prepared and lighted his lamp, which should then be tested by exposure to an explosive mixture of gas and air. This done, and having observed that the ventilating fan is working properly, the fireboss enters the mine by the intake opening, or proceeds at once to the foot of the downcast shaft in order to observe whether the usual amount of air is passing into the mine. Then, proceeding to the intake end of his section, he examines each place in order and marks the date to show that he has been there. Where gas or other danger is found, it must be removed at once, or all entrances to the placed barred by danger signals.

Having thus examined the working places, roads and travelingways in his section, the fireboss returns to the shaft bottom or mine entrance, and makes out a full report stating what dangers, if any, he has found. The miners' checks for all places where danger was found should then be held by the fireboss, to prevent those men from proceeding into the mine, until their places are made safe and have been examined and found fit for work. The fireboss must then report verbally to the mine foreman, before leaving the mine.

(b) It is the duty of the fireboss to examine for all dangers present in each working place and on all roads and travelingways in his section. He must look for any unsafe condition of the roof or coal, in a miner's place, and observe the need of setting any timbers that may have been discharged by the firing of shots the night before, or extra timbers that may be required to support loose top. He must also see that what timber is needed is on hand, and note the condition of the place with respect to dust. With most of these conditions, however, a good fireboss becomes thoroughly familiar in making his second round.

QUESTION—*Why is a knowledge of the specific gravity of the common mine gases necessary to a fireboss?*

ANSWER—The specific gravity of a gas is an indication of its relative weight, with respect to air of the same temperature and pressure. This knowledge acquaints the fireboss with the individual tendencies of the several gases to accumulate in the rise or dip workings of the mine, having due regard as to where the gas is being generated and other conditions affecting its location in the mine. For example, methane or marsh gas, being slightly more than one-half as heavy as air of the same temperature and pressure, has a tendency to accumulate at the roof and on steep pitches. On the other hand, carbon dioxide, being more than half again as heavy as air of the same temperature and pressure, has a tendency to accumulate at the floor and in dip workings.

QUESTION—*How would you provide ventilation for a tunnel giving off dangerous gases?*

ANSWER—In case this is a blind heading or tunnel, the air current must be conducted to the face by means of a brattice carried along one rib of the tunnel, the air then returning along the roadway. Instead of building a brattice along the rib, use is often made of an air tube of canvas, say 12 or 16 in. in diameter. Such tubes are made of various lengths. The outby end of the tube either terminates in the intake airway where the pressure is sufficient to force the required quantity of air through the tube; or that end of the tube is attached to a small blower stationed in the airway or at the entrance of the mine. The volume of air supplied at the face of the tunnel must be sufficient to dilute and render harmless the quantity of gas being generated.

Witnesses, Including Miners and Bondsmen, Identify Prisoners in Herrin Trial

By no means all the evidence produced in the first week of the Herrin massacre trial at Marion, Ill., can be said to favor the side of the defence. Lawyers for the United Mine Workers have not yet had a chance to put on their witnesses, but those already heard include union miners and a bondsman for a group of the indicted miners, and, under questioning from the state's attorneys, they have identified all five of the prisoners charged with the murder of Howard Hoffman, an employee in the strip mine of the Southern Illinois Coal Co., who was one of 21 men killed June 22 by a mob. The Hoffman case, the first of the series to be tried, involves only five of the long list of men indicted for murder by the grand jury. The five are Otis Clark, Leva Mann, Peter Carneghi, Peter Hiller and Bert Grace.

The day before the trial opened, Frank Farrington, Illinois union president, in a speech at a miners' meeting in the courtroom at Marion declared: "We are going to defend these men and stay with them until they are definitely found guilty. We will not desert them even then unless we are unqualifiedly convinced that they are unworthy of the support of the union. And I think that time will never come."

On the 13th the trial started with Farrington on one side of the room with Attorney Angus Kerr heading the miners' union defence and State Attorney General Brundage on the other side. It was plain from the opening statements of the union lawyers that the issue of unionism was to be kept to the fore and that the defence was going to claim justifiable homicide as the only charge that should be brought against the prisoners, who are being tried for murder. The defence appears based upon the claim that the Southern Illinois Coal Co. not only violated a contract with the union but imported armed ruffians to do it and that the company deliberately invited and caused war in a peaceful community by mistreating passers-by at the Lester strip mine, by shooting union men, and finally by attempting to lure the union forces closely into the open by a fake truce so that the mine guards could shoot more of them.

Capital and Labor Issue Not Involved

The state called it plain murder and State's Attorney Delos Duty declared: "There is not a semblance of conflict in this case between capital and labor. I want to try these men under the laws of their country, fairly and honestly."

The state agreed with the defence that the Lester interests had made an agreement merely to uncover and not to market the coal and that the company then proceeded to import armed guards and try to market it anyway. But in tracing the history of the case there were wide differences in statements as to just what happened after the mine force had surrendered and was marched along the road to Herrin, with slaughter occurring in various brutal forms along the way. The defence sought to prove that the five men charged with the murder of Hoffman were not at the scene of slaughter at all, but were from one to five or six miles away. The killers were strangers, it was asserted.

Dr. A. T. Black, head of the Herrin hospital, was the first witness, testifying to the nature of Hoffman's wounds. Coroner "Bill" McCown, one of the outstanding figures in the aftermath of the massacre, got considerably mixed up when he testified that Hoffman had died of gunshot wounds, but he could not describe the wounds. Charles F. Hoffman, white-haired father of the dead man, identified a photograph of his son. There followed some identifying of prisoners. Lawrence Beare, a Herrin truckman, identified Peter Carneghi as one of the armed men he had seen leading six prisoners through Herrin the morning of June 22. R. P. Poole, real estate dealer, identified Leva Mann and Percy Hall. Hall is not a defendant in the Hoffman murder. J. M. Lenz, another realtor, identified Hubert Walker. They all told of scenes of horror they had witnessed in and around the Herrin cemetery where a group of the prisoners were dragged, mutilated and killed.

George H. Harrison, farmer and banker and one of the seventy-five Herrin men who gave bond for the indicted union men, and his son Fred Harrison were witnesses the second day of the trial. They told of the killing of several men near their farm, naming Bert Grace and Dallas McCree as killers they could positively identify. Donald Ewing, a Chicago newspaperman, testified vividly and with accuracy of detail many of the scenes he had witnessed, especially of the incident in which Bert Grace, with a revolver, prevented Ewing from giving water to the dying Hoffman. William Goodman, miner and farmer, identified Otis Clark as being one of the armed mob which marched prisoners past his house. Henry Graves, miner and farmer, also testified that he recognized the prisoners in the mob.

Thus all five of the prisoners indicted for the murder of Hoffman were identified in the testimony aleady given.

Smokeless Operators Meet and Name Officers

That millions of tons of smokeless coal are available at the mines in the smokeless coal districts of West Virginia waiting for the necessary railroad equipment to be shipped to northern points where the coal shortage is acute, was a statement made by T. A. Farrell, chairman of the Transportation Committee, at a meeting of the Smokeless Operators' Association of West Virginia held Dec. 14 at the Waldorf-Astoria, New York City.

In the knowledge that considerable suffering has resulted through lack of fuel in New York, Mr. Farrell has taken the matter up with the Interstate Commerce Commission and has been assured of adequate transportation facilities for the near future. George Wolfe, of Berkley, W. Va., acting secretary of the association, pointed out that the smokeless coal district contributed 4,000,000 tons of coal every month during the strike, and when the strike was brought to an end, the railroad lines leading from the coal districts were almost paralyzed by the large increase of production. Since the end of the strike, he said, smokeless operators were able to ship only half of their normal production to parts of the country where it was needed most.

The blame for the inadequate transportation facilities was placed on legislation during the past few years, which makes it extremely difficult for the railroads to finance such development of their lines as is necessary to meet exigencies like the present coal shortage. Smokeless coal is suitable for both household and commercial purposes, Mr. Wolfe stated. He said that, given the necessary railroad equipment, the smokeless fields alone could bring considerable relief in the present crisis.

At a luncheon held after the business meeting in the morning the election of the following new officers was announced: President, R. H. Gross of Boston, president of the New River Coal Co.; First Vice-President, O. M. Doyerle of Bluefield, W. Va., president of the Flat Top Pocahontas Sales Agency; Second Vice-President, Kooper Hood, of Cincinnati, general sales manager of the Houston Coal Co.; Treasurer, George R. Collins, of the Smokeless Fuel Co., Charleston, W. Va.

Illinois Operators Join Assigned-Car Fight

Illinois operators have joined with the National Coal Association in the support of its effort to effect the abolition of assigned cars. The railroads presented their rebuttal last week, and an effort was made to establish that the claims of the operators that an adequate and regular supply of railroad fuel could be obtained without assigned cars were unsound. Testimony was presented by representatives of the Public Service Corporation of New Jersey and by the Cambria Steel Co. to the effect that a preferential car supply is necessary.

The Interstate Commerce Commission has decided to handle the assigned-car matter separately from the other features of mine rating and car distribution. Separate dates will be assigned for the oral argument of these divisions of the case. Since it is believed that many of the differences of opinion with regard to rules can be threshed out by mutual agreement, a joint conference of representatives of industry and of the carriers probably will be held in the near future.

Commerce Commission Decides Against Joint Mines, Limiting Car Supply to 100 Per Cent

In dismissing complaints of irregularity in car distribution in the case of the Bell & Zoller Coal Co. et al. vs. the Baltimore & Ohio Southwestern Railroad Co. et al. the Interstate Commerce Commission on Dec. 11 delivered a decision of far-reaching importance. As similar issues were involved, the commission's report also embraced the following cases: Fairmont & Cleveland Coal Co. vs. Baltimore & Ohio R.R. Co., 62 I.C.C. 269; No. 12399, Vigo Mining Co. et al. vs. Pittsburgh, Cincinnati & St. Louis R.R. Co. et al.; No. 12081, Fairmont & Cleveland Coal Co. vs. Baltimore & Ohio R.R. Co.; No. 12082, Fairmont & Cleveland Coal Co. vs. Monongahela R.R. Co.; No. 12083, New River Co. et al. vs. Virginian Ry. Co., and No. 12084, New River Co. et al. vs. Chesapeake & Ohio Ry. Co. upon reargument.

The Fairmont & Cleveland Coal Co. vs. B. & O. R.R. Co., 62 I.C.C., 269, termed the Fairmont Cases, related to rule 4 of Car Service Circular CS-31, Revised, which was found to be unreasonable and unduly prejudicial to joint mines and unduly preferential of local mines, to the extent that it limited the aggregate orders for cars of the joint mine to 100 per cent of its gross daily rating. It was also found that for the future, during periods of car shortage, defendants should distribute cars to the joint mines on their lines on the basis outlined in In Re Irregularities in Mine Ratings, 25 I.C.C., 286, called the Illinois Case. In effect, that rule provided that on days when the joint mine orders cars from only one carrier it shall be furnished cars based on its full rating from that carrier, and on days on which it orders cars from both carriers its rating on each of such carriers for the purpose of ordering cars should be 75 per cent of its full rating, subject to the limitation that on no day shall it be furnished with cars in excess of its maximum rating. No order was entered. Upon petition of intervening local mine operators, those cases were reopened for further argument and consolidated with Nos. 12362 and 12399. These cases were submitted together.

The complainants operate joint mines in West Virginia, Illinois and Indiana, as well as local mines in Illinois, served by two or more carriers. All the complaints substantially allege that defendants' rules, regulations, and practices governing the distribution of coal cars to complainants' mines served jointly by two or more railroads have resulted in the distribution, during car shortage periods since October, 1918, of a smaller share of empty coal cars to complainants' mines than is distributed to and received by mines in the same territory which are served by one defendant carrier only; and have been and are unreasonable, unduly preferential of complainants' competitors, and unduly prejudicial to complainants, in violation of sections 1 and 3 of the interstate commerce act. The commission is asked to prescribe just, reasonable, and non-discriminatory rules, regulations, and practices to govern the distribution of coal cars to mines served by more than one carrier.

Various operators and committees intervened in opposition to the complaints in Nos. 12362 and 12399. The Union Colliery Co. was the only intervener in whose behalf evidence was offered. Various intervening petitions were filed in Nos. 12081, 12082, 12083, and 12084. The defendants assume a neutral position and are merely concerned with the establishment of a rule that will be fair and reasonable to all parties concerned, and which will be workable.

"The complaints herein are directed against the last sentence of rule 4 of Circular CS 31, Revised," says the commission's report, "which limits the joint mine orders for cars from all the carriers to the gross daily rating of the mine. The whole subject of the ratings of coal mines, other than anthracite, and the distribution of cars between them in times of short car supply, is pending before us in another proceeding. While there may be local variations in method of application, the general basis of ratings may be stated in substance.

"The rating of a local mine is determined by taking the total tonnage shipped by the mine during the preceding month over the carrier serving the mine, dividing it by the number of hours worked in producing it, and multiplying the quotient by the number of hours in the recognized work-day (not more than 10 hours) of the individual mine. A rating so determined is called the daily rating, as distinguished from the gross daily rating which applies to a joint mine, and which is determined in a similar manner, but by taking the total tonnage shipped over the lines of all the carriers serving the mine.

"Complainants urge that under rule 4, here attacked, the natural advantages of the joint mine are not recognized in the distribution of cars. They say that the rule does not give the joint mine any advantage in this respect when, due to the development of its markets and the contracts which it has assumed, it must, of necessity, ship over lines other than the one having the greater car supply. Under the present rules a joint mine can receive as great a number of cars as the local mine located on the line having the greater car supply by confining its orders exclusively to that line. Complainants contend that rule 4 has had the effect, therefore, of limiting their distribution to markets on one railroad only.

Commission Not in Agreement with Complainants

"With this contention we are unable fully to agree. Whenever the joint mine orders cars from the different carriers serving it, it is doubtless due to other compensating advantages, which outweigh those of a temporary greater car supply, and such election is the voluntary choice of the shipper. . . .

"Interveners contend that unless an order for cars for the transportation of coal is accompanied by a bona fide tender or setting aside of the coal to be transported, it is not a reasonable request for transportation within the meaning of paragraph (4) of section 1 of the interstate commerce act.

"Interveners further contend that the first sentence of paragraph (12) of section 1 requires every carrier, during periods of car surplus, to make a just and reasonable distribution of cars among the mines served by it or customarily dependent upon it for car supply, and leaves the question of what is a just and reasonable distribution of cars to the discretion of the carrier or to us upon complaint and after full hearing, while the second sentence of paragraph (12) specifies the particular manner in which the cars are to be distributed during periods of car shortage and leaves nothing regarding the distribution to the discretion of either the carrier or to us. This sentence does not use the term 'distribution,' but interveners argue that to maintain and apply just and reasonable ratings and to count each and every car furnished to or used by any such mine for transportation of coal against the mine is a mandatory rule of law requiring an exact pro rata distribution of cars in accordance with the prescribed ratings, whether the mine be served by one or more carriers.

"In view of our conclusions herein, and because the interpretation of paragraph (12) is before us in another proceeding now pending, we will not pass upon that contention here. . . .

"The present facts considered, we do not conclude upon these records that the rule attacked, Rule 4 of Circular CS-31, Revised, is in principle unreasonable or unduly prejudicial. Our former conclusions in the Fairmont Cases, based upon a mistaken adherence to and extension of the decision in the Illinois Case, are reversed. The present decision is of course without prejudice to such determination of the questions before us in the general proceeding indicated as involving the mine-rating and car-distribution rules as the record may there require. The complaints herein will be dismissed, and we will enter an order to that effect."

Suggests That Government Buy Cars and Rent or Lend Them to the Railroads

Purchase of cars by the federal government, to be loaned or rented to railroads requiring additional rolling stock in emergency, is the suggestion made by F. B. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association, as a solution of the difficulties in which the coal industry and its indispensable adjunct, the railroads, find themselves. Mr. Nigh's proposal was made in the form of a reply to a letter of inquiry from John Hays Hammond, chairman of the U. S. Coal Commission.

The letter is of unusual interest in that it attempts to provide an answer to an economic problem in a way that will not only increase production of coal and lubricate and relieve the transportation system but will redound to the benefit of the coal-consuming public and ease the burden of high prices and mental anxiety now resting upon it.

"All that is required to guarantee to the entire coal-consuming public its fuel in sufficient quantities and at reasonable prices at all times is uninterrupted production and an adequate car supply, and with this guarantee we have every reason to believe that the economic principle of supply and demand will guarantee to the public coal at a satisfactory price. Time and time again it has been proved that the law of supply and demand is an effectual answer to price-fixing proposals," avers Mr. Nigh.

Commerce Commission Rules Against Roads On Coal Rates to Hagerstown District

The Interstate Commerce Commission has decided for the Hagerstown Chamber of Commerce in Case No. 12726. This involved rates charged by the Western Maryland Railroad Co., the B. & O., the Great Haven & Bruceton R.R. Co., and others on applicable rates on bituminous coal from the Cumberland-Piedmont, Meyersdale, West Virginia and Pittsburgh-Youghiogheny coal districts to Hagerstown, the Commerce body charging them to be unreasonable and unduly prejudicial to its members and unduly preferential to consumers at Martinsburg, W. Va., and Harrisburg, Pa.

The railroads argued that a reduction in the rates to Hagerstown would seriously affect rates to destinations beyond that city and Harrisburg, particularly with respect to the Pennsylvania if that carrier decides to meet the reduced rates at Hagerstown. The I. C. C. found the rates unreasonable to the extent that over the B. & O. and Western Maryland via Cherry Run, W. Va., and over the Western Maryland direct they exceed or may exceed the rates contemporaneously maintained over those lines from the points of origin considered to Martinsburg and Harrisburg.

That rates charged on coal from Melcroft on the Indian Creek Valley R.R. to Baltimore, Philadelphia and other Eastern destinations on the B. & O. are unduly prejudicial to the extent that they exceed the rates on coal to the same destinations from mines served by the B. & O. in the Meyersdale region, is the conclusion of a tentative decision made by the Interstate Commerce Commission examiner who investigated the case brought by the Melcroft Coal Co.

Class 1 Railroads Consume 7,833,000 Tons Of Coal in September

Class 1 railroads consumed 7,833,000 net tons of coal during September, 1922, as charged to account 394, compared with 7,393,000 tons in September last year, according to a report of the Bureau of Statistics of the Interstate Commerce Commission covering 179 steam roads. For the first nine months of 1922 these roads consumed 66,750,000 tons as compared with 67,193,000 tons during the same period in 1921.

The delivered cost per ton in September was $4.85, or $1.04 above that for September, 1921. The per-ton cost for the year to September 30, however, was only $3.94, as compared with $4.25 during the corresponding period of 1921.

Fuel-oil consumption continues to gain. During September 138,054,000 gallons was used, as compared with 116,059,000 gallons in September, 1921. The figures for the first nine months of 1922 and of 1921 were 1,097,282,000 and 1,042,939,000 gallons respectively.

Presents Amendment to Coal-Commission Act in Senate; Early Enactment Expected

Crowded committee and legislative calendars have delayed the expected early consideration by Congress of the bill to amend the act creating the U. S. Coal Commission, but as no signs of marked opposition have appeared it is expected that this measure will be enacted into law soon.

The bill introduced in the House by Representative Winslow previously was presented in the Senate last week by Senator Borah in identical terms, and was referred to the Committee on Education and Labor, of which its sponsor is chairman. There is no indication of material opposition in this committee or in the House Committee on Interstate Commerce, to which the Winslow bill was referred. The prospects are that any opposition which may appear on the floor will be outvoted easily.

The principal point in the bill is to authorize the fact-finding commission to gather information by sworn questionnaires, with penalties for failure to answer and for false statements.

Lehigh Valley and Glen Alden Companies Will Settle for Mine-Cave Damages

Officials of the Lehigh Valley and Glen Alden coal companies, two of the largest in the anthracite field, have made known their willingness to recompense owners for property damaged by mine caves, the announcement coming after the U. S. Supreme Court declared unconstitutional the Kohler mine-cave law, which forbade mining in any district where surface property and human lives might be endangered.

Advocates of surface protection will offer a new measure to the next Pennsylvania Legislature demanding 100 per cent restitution for all damage brought by caves.

Indiana Operators Surrender; Avoid Strike

The operators of Indiana did not relish the idea of a strike in that state just now with the markets of the West at last calling for coal. Anyway they concluded that they were standing on a technicality when they said Dec. 4 that they were going to refuse at the mid-month pay to check off an additional union assessment for the national organization of the United Mine Workers. In session Dec. 13, four days before the deadline set by John Hessler, president of District 11, they concluded the legal basis for their refusal on contract ground was hazy. So they surrendered. The check-off of $4 for the national union organization is new being made in Indiana.

Coal Consumption by Utilities Made Big Gain in October

Electric public-utility plants consumed 3,247,020 net tons of coal during October, according to a recent report of the Geological Survey. This compares with 2,899,074 tons in September.

The average daily production of electricity by public-utility power plants in October, as was predicted last month, broke all records of output, making the fourth time that a record has been established since May. The daily production of electricity in October was 139,100,000 kw.-hr.—a little more than 3 per cent greater than the September record. The total output for the period January to October, inclusive, was 38,653,000,000 kw.-hr., an increase of more than 15 per cent over the same period for 1921.

The use of fuel oil and gas in the production of electricity by public-utility power plants evidently reached a maximum in September, as the daily consumption of these two fuels in October decreased from the September figures.

Charging Oppression, Miners' Union Asks Federal Coal Commission to Probe Conditions in Logan County

The United Mine Workers on Dec. 13, 1922, called the attention of the U. S. Coal Commission to conditions that exist in certain sections of the coal-mining fields of West Virginia and suggested "that the commission make a full investigation to ascertain the facts and to estimate the effect of these conditions upon the coal-mining industry in general. The commission will find in these conditions some of the very influential causes of the demoralization of the industry. While similar conditions exist in other parts of the State of West Virginia, we desire to call special attention to Logan County because it is typical of others and a glaring example of the manner in which brutality and oppression against union coal miners is practiced by coal operators and coal companies.

"Logan is the second largest coal-producing county in West Virginia.

"Union miners, members of the United Mine Workers of America, are denied by these coal companies the rights that belong to every American citizen. If a miner joins the union he is at once made the victim of discrimination in employment. The right to organize does not exist in non-union Logan County.

"Miners who join the union are driven from the county.

"A miner loses his job if he talks in favor of the union.

"Union organizers are not permitted to enter Logan County, if the fact becomes known to the coal operators.

"Representatives of the union are not permitted to hold meetings in Logan County for the purpose of inducing miners by peaceable and orderly methods to join the union.

"Coal companies maintain an army of armed guards in the Logan County fields whose principal business it is to keep the union out by whatever means they may choose to employ. It is a common practice for these armed guards to assault, beat up, shoot and otherwise mistreat union members and men who wish to join the union. In other words, it is the business of these guards, armed with high-powered rifles, revolvers and blackjacks, to 'eliminate' union men. And for many years past this process of 'elimination' has left a bloody trail all over Logan County.

Right of Free Speech, Union Says, Is Withheld

"The constitutional right of free speech and free assembly does not exist in Logan County where these armed thugs hold sway.

"None of these armed guards are ever punished under the law for the crimes they commit against coal miners and members of their families, because coal companies dominate the courts, elect and control public officers, run the elections and do as they please.

"Deputy sheriffs in Logan County are not paid out of county funds but they are paid with money donated to the sheriff by coal companies and coal operators. In 1920 these coal operators furnished the sheriff of Logan County $46,630 for the payment of deputy sheriffs and in 1921 it was $61,517.

"Coal companies do not hire armed guards for the protection of company property but for the 'elimination' of union miners and union organizers.

"Armed guards and deputy sheriffs arrest union members with or without reason or cause and throw them in jail at Logan, where many of them have been brutally mistreated. Union men have even been killed while thus held prisoners in the jail. Men are arrested and jailed for no reason except that they are union members or are found giving encouragement to the union.

"The relation of miners to their employers has by judicial decision or interpretation been established as that of servant to master, and under such decisions miners and their families have been evicted from their homes without notice and without any consideration of mercy or decency.

"The miners in a large part of the non-union section are coerced by the use of anti-union contracts known as 'yellow-dog contracts.'

"These are but some of the outrages that are committed in Logan County as a means of keeping the miners' union from obtaining a foothold in that field. The list could be lengthened by the recital of almost unbelievable atrocities, but we do not feel that it is necessary to do more than call the attention of the commission to the situation and that the commission itself will realize that something must be done in Logan County and certain other counties in West Virginia if the coal industry is to be stabilized and placed on the level where it should be.

"Obviously, such conditions as exist in Logan County and certain other sections of the West Virginia coal-mining fields contribute to the general discontent and unrest that is evident today. It is equally apparent that the influence of these conditions cannot be hemmed in by the boundary lines of the State of West Virginia. The situation in West Virginia is notorious throughout the United States. It is well known to miners everywhere, and they naturally resent such treatment of their fellow workers of that state. It is a condition provocative of indignation and strife. It should not be allowed to continue. We believe this commission should find out just how the Logan County and West Virginia situation affects the coal-mining industry, for, if the commission can find a way to put a stop to the practices that prevail in that field, it will take a long step toward the establishment of industrial peace on a permanent basis.

Suggests Calling of Informed Witnesses

"We suggest that the commission examine those parts of the testimony bearing on this subject which was taken by the Senate Committee on Education and Labor in the fall of 1921 at hearings upon Senate Resolution No. 80, and read also the divided report of the committee. We suggest, further, that the commission call as witnesses such persons in West Virginia and elsewhere as are acquainted with the conditions mentioned. We shall be pleased to furnish the commission a list of names of such persons if the commission so desires. In the list will be the names of numerous persons who have been victims of the Logan County system who can give direct, first-hand evidence. We also offer to the commission any other assistance that may aid the commission in ascertaining the facts.

"We do not believe the commission can gain a comprehensive vision of the evils of the coal industry without going to the bottom of the Logan County situation. Such procedure on the part of the commission will, we believe, greatly encourage a feeling among the coal miners of the country that at least there is a governmental agency that proposes actually to do something to establish permanent peace in the coal industry.

"After having made an investigation and study of conditions in the West Virginia coal fields by means of hearings and a personal visit to those fields, Senator Keyon, on Jan. 25, 1922, made a report as chairman of the Senate Committee on Education and Labor to the Senate on Senate Resolution No. 80," which the statement quotes at length.

"The United Mine Workers of America hold firmly to the well-established principle of the right of workers to organize and deal collectively with their employers. The right of workers to organize is fundamental. It has been pronounced and affirmed by the government, the Congress, the courts, by state legislatures, by the press, the pulpit, by civic bodies everywhere and by the public. Yet it does not exist in Logan County.

"The right of workers to organize was declared emphatically by President Harding in his inaugural address.

"When he was President, Woodrow Wilson on many occasions laid down and adhered to the principle that workers had the lawful and moral right to organize and bargain collectively with their employers.

"Theodore Roosevelt, while President of the United States in 1902, said: 'I believe emphatically in organized labor. I believe in organizations of wage workers. Organ-

ization is one of the laws of our social and economic development at this time.'

"Chief Justice Taft, before his election to the Presidency, said: 'What the capitalist who is the employer of labor must face is that the organization of labor—the labor union—is a permanent condition in the industrial world. It has come to stay. If the employer would consult his own interest he must admit this and act on it. Under existing conditions the blindest course that an employer of labor can pursue is to decline to recognize labor unions as the controlling force in the labor market and to insist upon dealing only with his particular employees. Time and again one has heard the indignant expression of a manager of some great industrial enterprise that he did not propose to have the labor union run his business; that he would deal with his own men and not with outsiders. The time has passed in which that attitude can be assumed with any hope of successfully maintaining it.' During the war emergency, Mr. Taft served as joint chairman of the War Labor Board, and it is interesting to note that after his experience in that work he said on Aug. 9, 1919: 'Labor unions have been necessary to secure to the individual workingman an opportunity to deal with his employer on an equality and free from the duress of the immediate want of a daily wage to demand what he regards as an adequate and just return for his labor, or to withdraw from employment.'

"And this from Charles Evans Hughes, now Secretary of State, in an address at Columbia University on Nov. 30, 1918: 'I trust there will be no more struggle in futile opposition to the right of collective bargaining on the part of employees. The recognition of the right of representation and the prompt hearing of grievances provides the open door to reasonable and just settlements. And in returning to peace conditions there should be the utmost care to preserve every possible means which has been found helpful during the war for the investigation of the complaints of labor and for the adjustment of demands.'

RIGHT OF WORKERS TO ORGANIZE CONCEDED

"Employers of importance and vision concede the right of the workers to organize. Thus John D. Rockefeller, Jr., said in the Annals of the American Academy of Political and Social Science, January, 1919: 'As regards the organization of labor, it is just as proper and advantageous for labor to associate itself into organized groups for the advancement of its legitimate interests as for capital to combine for the same objects.'

"The United States Chamber of Commerce, in its referendum No. 27, on a report on principles of industrial relations, declared: 'The right of workers to organize is as clearly recognized as that of any other element or part of the community.'

"J. N. Tittenmore, a member of the employers' group in the President's first Industrial Conference, October, 1919, said: 'So far as I am concerned, I am committed in my mind and in my very soul to unionism as it is expressed by the administrative faculty of the American Federation of Labor, and in saying that, my friends, I do not sanction ultra-radicalism.'

"Harry A. Wheeler, former president of the United States Chamber of Commerce and another member of the employers' group in the first Industrial Conference, said: 'We freely accord the place of the trade and labor unions in those organizations which the men have a right to join.'

"Harry M. Daugherty, present Attorney-General of the United States and a spokesman for the administration, declared in a speech at Canton, Ohio, on Oct. 28, 1922: 'I am not, nor have I ever been, an opponent of honestly conceived labor organizations and trade unionism. If I were a skilled worker in mill, factory or mine, I would join a union, but I would never affiliate with a union that sets its laws and its constitution above the laws and Constitution of my country. In a great industrial nation such as ours, labor organizations are necessary, but they must be the right kind of unions under the right kind of leadership.'

"The labor provisions of the peace treaty affirm 'the right of association for all lawful purposes by the employed, as well as the employer.'

"Twenty-six states have enacted laws specifically legalizing trade unions and prohibiting discharge on grounds of membership therein. They are Colorado, Connecticut, Illinois, Iowa, Kansas, Louisiana, Maine, Michigan, Minnesota, Massachusetts, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Texas, Utah, Virginia, Washington, Wisconsin and Wyoming.

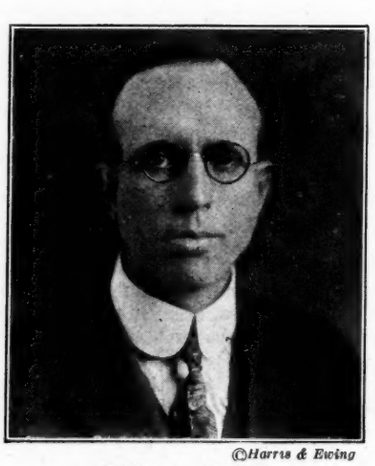
"In the principles and policies of the War Labor Board the right to organize was enunciated in detail. This declaration, worked out in conference between representatives of employers and employees and given the force of law for the war emergency by Presidential proclamation, was as follows: 'The right of workers to organize in trade unions and to bargain collectively through chosen representatives is recognized and affirmed. This right shall not be denied, abridged or interfered with by the employers in any manner whatsoever.'

"Against all of these authorities and in opposition to the enlightened thought and sense of justice of the entire nation, the coal operators of Logan County arrogantly declare that their employees shall not exercise their right to organize."

Study of Waste in Mining by C. A. Allen Elicits Widespread Interest

One of the phases of the fact-finding being done by the President's Coal Commission which is exciting wide interest is that pertaining to waste in the mining of coal. This study is under the immediate charge of Carl A. Allen.

Mr. Allen was born in Colorado Springs and was educated at the Colorado School of Mines. Following his graduation he worked for four years as a mining superintendent and as a mining engineer in gold and copper properties in Colorado, New Mexico, Arizona and in the states



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CARL A. ALLEN

of Sinaloa and Chihuahua in Mexico. For a number of years thereafter he engaged in consulting work including problems of coal-mine engineering, with offices in Denver.

From 1911 to 1913 Mr. Allen was assistant professor of mining at the Colorado School of Mines, where he established a coal-mining course. In 1916 he joined the staff of the U. S. Bureau of Mines and spent a year and a half in charge of one of its mine-rescue cars, operating in the Montana and Wyoming district. In 1918 he was sent to Utah to direct the Bureau investigations in Utah, Wyoming and Idaho. An arrangement was made whereby he was engaged on a part-time basis to serve as the chief mine inspector for the State of Utah. That arrangement still is in effect. His work with the Coal Commission is being done under a leave of absence from his regular duties. Since the passage of the general leasing act Mr. Allen has directed leasing work in Utah, Wyoming and Idaho.

Coal Wholesalers Submit Detailed Reply to Nineteen Questions of U. S. Coal Commission

At a conference of the American Wholesale Coal Association with the United States Coal Commission Dec. 15 the association submitted a formal statement of its views in connection with the nineteen topics suggested by the commission. The report was prepared and presented by the executive committee and senior council of the American Wholesale Coal Association speaking for the association and for a number of coal wholesalers not members of the association, the whole constituting a large majority of the coal wholesalers of the United States. This committee estimated that there are 2,000 wholesalers in the United States with an investment of $200,000,000 employing 20,000 persons, and distributing 450,000,000 tons of bituminous coal and coke and 60,000,000 tons of anthracite coal annually. In answer to the question of profits of other persons or corporations having to do with production, distribution or sale of coal, they said "we regret that there are no extensive accurate statistics available to show the cost of wholesale distribution of coal, nor the profits realized. This condition is due in large measure to lack of uniform accounting methods, to natural reluctance to disclose details of private business, and to fear of breach of laws prohibiting restraint of trade or competition.

"From such data as are available and from general knowledge we conclude that the return on the capital involved and compensation for the risks and services performed are and have generally been reasonable. An interrogatory addressed to all in the coal trade asking, by months for the current year, and by years over the last ten years, for the gross volume and cost for the period, the gross realization and the cost of doing the mercantile end of the business, will give to the commission an absolute national answer in such shape as can be readily analyzed."

Irregular Production Laid to Three Causes

The report assigned three principal causes for irregular production:

"(1) Labor losses due to local and national strikes. This will be eliminated when labor organizations are made subject to the same laws as govern business and perhaps some considerable improvement will obtain when immigration laws are more carefully studied and intelligently applied.

"(2) Lack of demand for long-continued periods of industrial depression. Continued education through the publication of statistical reports on production, stocks and consumption will be of assistance. The wholesaler with his year-round sales and technical force is one of the most potent factors in reducing this irregularity of production.

"(3) Car shortage or transportation disability. It is a fact well known to your honorable commission that transportation disabilities in the past have been the greatest cause for lost tonnage in time of stress. To this cause also may be attributed almost entirely the instability of the market. This condition we believe is in no wise due to the faults of corporate management but is the natural result of government operation during the war period and after. We suggest that some interesting facts may be developed if the commission will inquire into:

"(a) The seasonal fluctuations of movement of all commodities and the causes therefor, including coal.

"(b) The evils incident to the assigned-car practice.

"(c) The differentiation between coal and other bulk commodities in the car-distribution rules and transportation practices.

"We deal exclusively with coal after it has been mined and becomes an article of commerce," the report states. "Waste prevention is one of our chief functions. We seek at all times to educate the consumer to use the coal most adaptable to his peculiar requirements. We also endeavor to persuade the consumer to equip himself to use the coal most accessible. Among other sources of waste it is suggested that the commission inquire as to losses by: (a) Improperly loaded cars, (b) Use of defective and unfit equipment, (c) Loss in transit by pilferage, (d) Losses by rough handling of trains, (e) Loss by degradation, (f) Theoretical losses by inaccurate weighing."

Continued education of the consumer that he may know the coal most suited to his needs, having due regard to transportation conditions and freight rates was urged. Transportation losses can be reduced by:

(a) Proper loading of railroad cars, (b) Policing in transit, (c) Improved care in train operation, (d) Proper preparation of coal at the mines, (e) Frequent scale inspection and adjustment, (f) Uniform and prompt disposition of claims arising against the carriers.

"The present situation is, in our judgment, due to the unnatural conditions that prevailed during and since the Great War; inadequate transportation, strikes, and government regulations. The remedy is:

(a) A return to conditions prevailing for many years prior to the War and,

(b) Free operation of the law of supply and demand,

(c) The financing of railroads to enable them to properly equip themselves,

(d) The doing away with preferential distribution and movement of private and assigned cars;

(e) Stabilization of mine labor and readjustments of labor costs;

(f) Restoration of fluidity of car movement by removal of unnecessary reconsignment restrictions and permitting one free reconsignment to any destination as formerly allowed;

(g) Encouragement of storage by consumers, and

(h) The elimination of discriminatory freight rates where they exist.

"We believe that under these conditions competition would restore normal supply and prices."

Coal Industry to Hold General Meeting in Washington Late in January

A general meeting of the coal industry will be held in Washington late in January. The decision to call such a conference was reached during the course of the meetings in Washington in which the special committee of bituminous operators, the local coal association secretaries and the government relations committee of the National Coal Association participated. The meeting will not be confined to operators maintaining memberships in the National Coal Association.

During the sessions which were held Dec. 14, 15 and 16 it was emphasized that wholehearted co-operation should be given the Coal Commission. When complaints were voiced as to the intricate character of the questionnaires that the U. S. Coal Commission is sending out, they were silenced by emphatic statements from J. C. Brydon to the effect that the questionnaires had been considered carefully by the special committee of bituminous operators at a meeting with the members of the Coal Commission, at which time certain simplification was accomplished, but that further simplification cannot be undertaken. It also was revealed that there is no disposition on the part of the operators to oppose anything that the commission is doing or to interfere with the prompt enactment of the amendments which the commission has asked. It was decided that each local association would brief its own case in so far as it may be necessary to explain situations peculiar to each particular district.

Farrington Re-elected Illinois President

Frank Farrington, president of the United Mine Workers in District 12, the State of Illinois, was re-elected by an overwhelming majority last week. His opponent was John Hindmarsh, of Riverton, Ill., who received some support in and around Springfield and scattered votes elsewhere.

Coal Commission Will Confine Efforts to Submitting To Congress Facts and Conclusions

By Paul Wooton
Washington Correspondent of *Coal Age*

While Jan. 15 hangs over the President's Coal Commission like the sword of Damocles, it is believed that enough data can be analyzed to permit of a preliminary report that will have weight with the industry as well as with the public. Machinery such as the commission must set up is ponderous. It takes a long time to get it in working order, but once in operation, a great deal can be accomplished in a short time. Chairman Hammond, of the commission, illustrates the situation by stating that the commission now is getting the "miners' eye," referring to the fact that some time must be spent underground before the human eye adjusts itself to the darkness of a mine. Then, too, the efficiency of the commission, he admitted, has been improved since the members, latterly, have provided themselves with gas masks.

Chairman Hammond states most emphatically that the commission's report will not be a "wishy-washy affair." It will contain some rather drastic suggestions, as it is believed that bold surgery is necessary if the sources of the ills of the coal industry are to be reached.

It was emphasized by Mr. Hammond and by Dr. Smith, in verbal statements to the Washington correspondents on Dec. 16, that the commission will not undertake anything that can be interpreted as mediation in wage scales. That is the responsibility of the operators and the mine workers, it was said, and while the commission will use its moral influence to induce them to get together and will emphasize to both operators and mine workers the far-reaching consequences likely to follow another strike, the commission will do nothing more than to submit to Congress facts and conclusions.

Too Many Wholesalers and Retailers

Overexpansion in the coal industry, Mr. Hammond stated, is not confined to the producers. Both wholesalers and retailers, he declared, complain because there are too many persons engaged in the wholesaling and retailing of coal. This condition adds very greatly to the burden which the consumer must bear, he said. Since the large number of organizations engaged in jobbing and retailing coal results in much duplication and the aggregate of needless overhead is large, it is not a difficult task to point out superfluous additions to the selling price, but it is difficult to suggest means whereby the eliminations can be made so that the wholesalers and retailers may be reduced in number.

John L. Lewis was before the commission for an entire day last week and conferences were had with a number of operators with regard to the wage-scale matter. As discussion of these conferences could accomplish no good purpose at this time, the commission has declined to give out any facts with regard to what was said. The operators who were called to Washington to discuss the wage-scale situation were W. K. Field, Michael Gallagher, E. M. Poston, C. G. Hall, H. C. Adams and H. N. Taylor.

While the subpoenaing of Washington retailers in connection with a local advance of 50c. a ton in their prices for anthracite resulted in columns of publicity in the newspapers of the capital it developed nothing of material significance. Nothing which developed at the hearing indicated that there had been any profiteering on the part of the Washington dealers, although it is apparent that there is a difference of opinion as to what constitutes a fair margin for the retailer.

The dealers who were subpoenaed by the commission were the Allegheny Coal Co., Blick Brothers, J. Maury Dove Co., W. W. Griffith, William King & Son, L. E. White Coal Co., Frazier & Co., Charles F. Miller Coal Co. and T. W. Perry Coal Co. The representatives of these companies were not at all reticent in their replies to the questions propounded by the commission, although it was apparent that they resented the fact that they were legally subpoenaed when, it is said, they would have been willing to come voluntarily.

A large delegation representing the executive committee and the senior council of the American Wholesale Coal Association appeared before the commission on Dec. 15 to submit their reply to the 19 questions asked by the commission. There was some discussion of these replies but no matters of particular significance developed. The replies submitted by the wholesalers appear elsewhere in this issue.

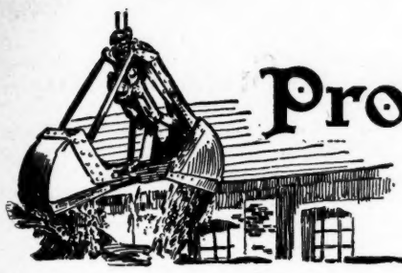
Those who represented the associtaion on this occasion were Seth W. Morton, president, Albany, N. Y.; J. W. Johns, vice-presdient, Pittsburgh; G. H. Merriweather, secretary and treasurer, Chicago; E. M. Platt, Chicago; George N. Dexter, New York; N. H. Swayne, Philadelphia; W. R. Coyle, Bethlehem, Pa.; R. S. Bain, Cleveland; R. K. Pratt, Boston; C. A. Owen, New York; C. F. Dunn, Detroit; Charles L. Dering, Chicago; H. J. Heywood, Toledo; C. C. McGill, Toronto, Ontario, and I. C. Cochran, Washington representative.

Would Have Railroads Operate Mines

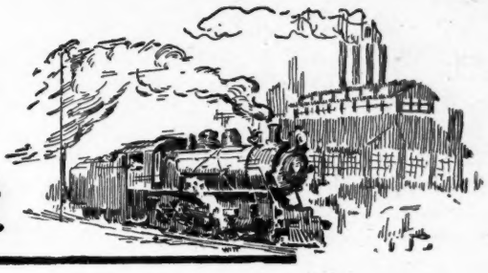
One of the most reactionary suggestions made to the commission has come from a prominent source generally regarded as being radical. The suggestion is that the coal mines be turned over to the railroads to operate. The opinion is expressed that as the railroads use 30 per cent of the coal, as it constitutes 40 per cent of the total tonnage they haul, and as transporttaion is the most important single element entering into the instability of the coal industry, the railroads could operate the mines more effectively than could the government or individual operators.

Returns from the cost questionnaires are coming in with gratifying promptness. While the great bulk of the returns received thus far are from operators conducting properties of small output, some of the larger producers have made their returns with surprising promptness. It is pointed out at the commission that it is not necessary to hold up the entire questionnaire until the information has been gathered for the whole series of twenty-one months. The statisticians welcome partial returns, as it enables them to get started on their work.

The working committee designated by the American Railroad Association to co-operate with the Coal Commission is composed of the following: G. Metzman, assistant to the president, New York Central; C. M. Shaeffer, chief of transportation, Pennsylvania; J. R. Kearney, assistant to the vice-president, Baltimore & Ohio; A. T. Owen, superintendent of transportation, Philidelphia & Reading; W. L. Booth, superintendent of transportation, Chesapeake & Ohio; D. E. Spangler, general superintendent of transportation, Norfolk & Western; W. S. Andrews, assistant to the vice-president, Southern Ry.; G. E. Evans, vice-president in charge of operation, Louisville & Nashville; G. H. Kummer, assistant freight agent, Chicago & Eastern Illinois; W. L. Barnes, general superintendent of transportation, Chicago, Burlington & Quincy; J. O. Halliday, superintendent of transportation, New York, New Haven & Hartford; C. M. Booth, freight traffic manager, Pere Marquette; C. R. Moore, general superintendent of car service, Grand Trunk; J. E. Roberts, superintendent of transportation, Delaware & Hudson; L. W. Baldwin, vice-president in charge of operation, Illinois Central; B. J. Rowe, coal traffic manager, Illinois Central; W. A. Northcutt, general solicitor, Louisville & Nashville; W. S. Bronson, general attorney, Chesapeake & Ohio; R. V. Fletcher, general solicitor, Illinois Central; M. J. Gormley, chairman, Car Service Division, and J. H. Parmelee, director, Bureau of Railway Economies. Mr. Roberts has been designated as chairman of the committee.



Production and the Market



Weekly Review

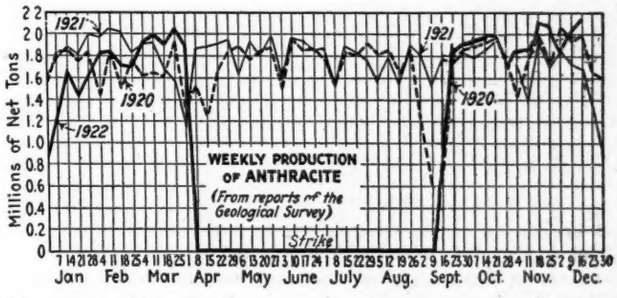
Weather conditions dominated the coal market last week. Opening with mild weather, domestic coal held firm, but the steam sizes slipped steadily downward. Near-zero temperatures came to the rescue before the week closed and caused the first definite stiffening in demand that has occurred in the last thirty days. "No-markets" quickly disappeared, car shortage became apparent at once and prices rallied from their recent slump. *Coal Age* Index of spot bituminous coal prices rose to 336 on Dec. 18, as compared with 325 on Dec. 11; the average price at the mine as represented by the index number was $4.07, an increase of 14c. over the week preceding.

Industrials Delay Orders for Market Bottom

Industrial consumers have been laying low, waiting for the bottom of the market to be reached before entering orders. At the first sign of stiffening the railroads increased their stocking movement and industries became insistent on quick deliveries of outstanding orders. There was no rush to cover by the general run of steam users—stocks are too ample for that—but there was enough increase in the call to take up the free coal that has been cluttering railroad yards, and selling conditions immediately reflected this. It is unlikely that coal will find a livelier market, however, until after Jan. 1, as inventory time presents a strong argument against heavy replenishment of reserves.

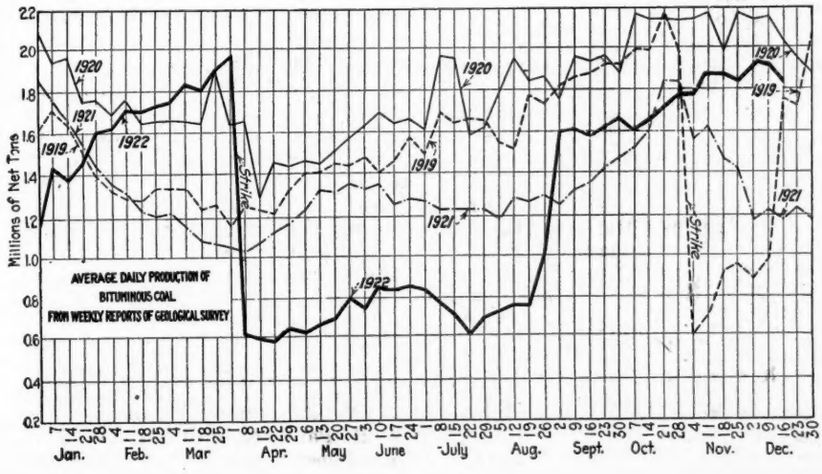
Snow and cold weather uncovered sufficient demand in the Middle West to discount the effect of the Indiana strike blow-up. Its subsidence is not now noticed in the general market awakening, although the fear of it had caused better takings of steam tonnage during the past two or three weeks. A pronounced buying of car numbers by industries, better takings by railroads and a growing call for domestic quickly placed mines in a comfortable position for the balance of the year. The same conditions exist but in a lesser degree in the Eastern Inland and Cincinnati Gateway markets, where the absorption of former Lake tonnage had been accomplished with but little price softening. A growing demand for domestic was the best feature, of course, but the steam coals also strengthened with the better buying by railroads and general consumers.

The most active market, however, is in the North Atlantic section. Cars are no more plentiful and a foretaste of crippling weather for the railroads has caused a heavy demand. Best coals are practically unobtainable and pool classifications of the lower grades have been disregarded in the buying movement that has come in on the cold wave. As usual, the tight supply has released orders which have long been held in abeyance in the hope of lower prices. An important



feature in this territory is the increasing use of sized bituminous as a substitute for anthracite. The domestic market is now an attractive one for those producers who are prepared to screen their coal, and shippers are alert to the possibilities of a permanent market in these centers.

Retail supplies of anthracite have touched bottom. The trade is swamped with orders but receipts are discouragingly inadequate. In New York the edict of


Millions of Net Tons
1920
1921
1919
1922
AVERAGE DAILY PRODUCTION OF BITUMINOUS COAL FROM WEEKLY REPORTS OF GEOLOGICAL SURVEY
Strike
Jan. Feb. Mar Apr. May June July Aug. Sept. Oct. Nov. Dec.

Estimates of Production

(Net Tons)

BITUMINOUS

	1921	1922
Nov. 25 (*b*)	7,101,000	11,100,000
Dec. 2 (*b*)	7,105,000	10,387,000
Dec. 9 (*a*)	7,312,000	11,389,000
Daily average	1,219,000	1,898,000
Calendar year	384,598,000	376,826,000
Daily av. cal. year	1,334,000	1,301,000

ANTHRACITE

Nov. 25 (*b*)	1,650,000	2,174,000
Dec. 2 (*b*)	1,815,000	1,819,000
Dec. 9 (*a*)	1,675,000	2,038,000
Calendar year	86,853,000	46,699,000

COKE

Dec. 25 (*b*)	292,000	298,000
Dec. 9 (*a*)	112,000	289,000
Calendar year	5,161,000	7,189,000

(*a*) Subject to revision. (*b*) Revised from last report.

the State Fuel Administrator requiring 25 per cent delivery of substitute fuel with domestic sizes has enhanced values on coke and sized bituminous coals. Independent coals are finding an attractive market in Canada and the regions are honeycombed with these Northern buyers who offer stiff premiums for prompt shipment. Buckwheat has boomed with the cold-weather demand and consumers, unable to obtain family sizes, are taking this as a substitute.

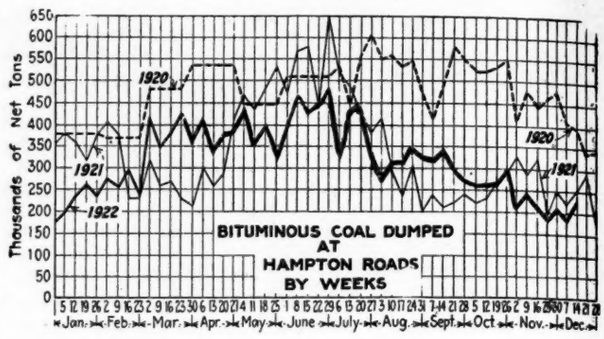
BITUMINOUS

Production of soft coal continues at a daily rate of approximately 1,900,000 tons. Output during the week ended Dec. 9 is estimated at 11,389,000 tons, including lignite, coal coked, mine fuel and local sales, according to the report of the Geological Survey.

Preliminary reports of cars loaded during the first four days of last week (Dec. 11-16) indicate a small decline on account of lay-off in some union districts on Tuesday, miners' election day. It is expected that the total output probably will be between 10,800,000 and 11,000,000 tons.

The all-rail movement to New England declined to 2,872 cars during the week ended Dec. 9, as compared with 3,055 cars in the week preceding. That market is in fairly comfortable position as regards stocks and the recent jump in central Pennsylvania prices finds New England buyers more unresponsive.

Hampton Roads dumpings for all accounts were 257,326 net tons during the week ended Dec. 11, as compared with



220,221 tons in the preceding week. Supplies at the piers are running down and shippers lack stocks to meet prompt orders.

Final reports show that tidewater business improved

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Nov.20, 1922	Dec.4, 1922	Dec.11, 1922	Dec.18† 1922
Smokeless lump	Columbus	$6.75	$6.50	$6.25	**$6.00@$6.75**
Smokeless mine run	Columbus	6.10	6.15	6.00	5.75@ 6.25
Smokeless screenings	Columbus	5.75	5.75	5.50	5.25@ 5.75
Smokeless lump	Chicago	6.25	6.25	7.75	7.50@ 8.00
Smokeless mine run	Chicago	5.60	5.60	6.25	**6.50@ 6.75**
Smokeless lump	Cincinnati	6.00	6.55	6.55	**6.00@ 8.00**
Smokeless mine run	Cincinnati	6.10	5.40	5.40	**5.15@ 6.50**
Smokeless screenings	Cincinnati	6.25	5.30	5.30	4.60@ 6.00
*Smokeless mine run	Boston	8.00	7.50	7.75	**7.75@ 8.00**
Clearfield mine run	Boston	3.85	3.50	3.60	**3.50@ 4.85**
Cambria mine run	Boston	4.35	4.25	4.35	**4.25@ 5.00**
Somerset mine run	Boston	4.10	3.85	3.85	**3.75@ 4.50**
Pool 1 (Navy Standard)	New York	5.00	5.25	5.25	**5.50@ 6.00**
Pool 1 (Navy Standard)	Philadelphia	4.75	5.15	5.15	**5.10@ 5.60**
Pool 1 (Navy Standard)	Baltimore	4.60	4.85	5.00	**5.50@ 6.00**
Pool 9 (Super. Low Vol.)	New York	4.25	4.60	4.60	**4.75@ 5.50**
Pool 9 (Super. Low Vol.)	Philadelphia	4.45	4.65	4.65	**4.75@ 5.00**
Pool 9 (Super. Low Vol.)	Baltimore	3.85	4.10	4.35	**5.00@ 5.15**
Pool 10 (H.Gr.Low Vol.)	New York	3.60	4.95	4.00	**4.25@ 4.75**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.60	3.95	3.95	**4.00@ 4.35**
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.35	3.35	4.00	**4.50@ 4.60**
Pool 11 (Low Vol.)	New York	3.05	3.00	3.25	**3.25@ 3.75**
Pool 11 (Low Vol.)	Philadelphia	3.15	3.35	3.35	**3.35@ 3.75**
Pool 11 (Low Vol.)	Baltimore	3.05	3.10	3.10	**4.00@ 4.25**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.50	3.25	2.80	**3.00@ 3.40**
Pool 54-64 (Gas and St.)	Philadelphia	3.50	3.55	3.35	3.25@ 3.50
Pool 54-64 (Gas and St.)	Baltimore	3.30	3.10	3.00	**3.75@ 4.00**
Pittsburgh sc'd gas	Pittsburgh	4.50	4.85	5.25	5.00@ 5.50
Pittsburgh mine run (St.)	Pittsburgh	3.35	2.60	2.60	2.50@ 2.75
Pittsburgh slack (Gas)	Pittsburgh	3.60	3.25	3.25	3.00@ 3.50
Kanawha lump	Columbus	5.75	5.75	5.25	**5.00@ 5.75**
Kanawha mine run	Columbus	3.60	3.35	3.25	*2.90@ 3.10*
Kanawha screenings	Columbus	3.35	3.25	2.80	2.75@ 2.90
W. Va. lump	Cincinnati	6.00	6.25	5.75	**6.00@ 6.50**
W. Va. Gas mine run	Cincinnati	4.00	3.50	3.35	3.25@ 3.50
W. Va. Steam mine run	Cincinnati	3.60	3.15	3.25	*3.00@ 3.25*
W. Va. screenings	Cincinnati	3.35	3.00	3.00	2.75@ 3.25
Hocking lump	Columbus	5.05	5.05	4.75	**5.00@ 5.35**
Hocking mine run	Columbus	3.50	3.00	2.60	2.50@ 2.75
Hocking screenings	Columbus	3.00	2.85	2.50	**2.40@ 2.65**
Pitts. No. 8 lump	Cleveland	4.15	4.50	4.10	**4.00@ 4.75**
Pitts. No. 8 mine run	Cleveland	3.60	3.20	3.10	**3.15@ 3.25**
Pitts. No. 8 screenings	Cleveland	3.31	2.85	2.85	**3.00@ 3.10**
Midwest					
Franklin, Ill. lump	Chicago	5.25	5.00	5.25	5.00@ 5.50
Franklin, Ill. mine run	Chicago	4.10	4.10	4.10	4.00@ 4.25
Franklin, Ill. screenings	Chicago	2.60	2.50	2.35	**2.50@ 2.90**
Central, Ill. lump	Chicago	4.50	4.25	4.25	4.00@ 4.50
Central, Ill. mine run	Chicago	3.10	3.10	3.10	3.00@ 3.25
Central, Ill. screenings	Chicago	1.80	1.65	1.65	**1.75@ 2.25**
Ind. 4th Vein lump	Chicago	5.10	5.10	5.10	5.00@ 5.25
Ind. 4th Vein mine run	Chicago	3.85	3.85	3.85	3.75@ 4.00
Ind. 4th Vein screenings	Chicago	2.05	2.25	2.25	2.15@ 2.40
Ind. 5th Vein lump	Chicago	4.75	4.75	4.75	4.50@ 5.00
Ind. 5th Vein mine run	Chicago	3.60	3.60	3.60	3.50@ 3.75
Ind. 5th Vein screenings	Chicago	1.85	2.00	2.00	*1.90@ 2.00*
Standard lump	St. Louis	3.75	4.25	4.25	*3.75@ 4.50*
Standard mine run	St. Louis	2.50	2.60	2.25	*2.00@ 2.25*
Standard screenings	St. Louis	1.35	1.35	1.35	1.35@ 1.40
West Ky. lump	Louisville	4.35	3.75	3.75	**3.75@ 4.00**
West Ky. mine run	Louisville	2.50	2.25	2.25	2.00@ 2.50
West Ky. screenings	Louisville	1.50	1.50	1.50	**1.65@ 2.00**
West Ky. lump	Chicago	4.10	3.85	3.85	3.75@ 4.00
West Ky. mine run	Chicago	2.85	2.60	2.60	2.50@ 2.75
South and Southwest					
Big Seam lump	Birmingham	3.95	3.95	3.95	3.45@ 4.45
Big Seam mine run	Birmingham	2.35	2.35	2.35	2.25@ 2.50
Big Seam (washed)	Birmingham	2.60	2.60	2.60	2.50@ 2.75
S. E. Ky. lump	Chicago	6.10	6.10	6.25	6.00@ 6.50
S. E. Ky. mine run	Chicago	4.25	4.25	4.25	*3.75@ 4.00*
S. E. Ky. lump	Louisville	6.50	6.50	6.35	6.00@ 6.75
S. E. Ky. mine run	Louisville	4.00	3.40	3.35	3.00@ 3.75
S. E. Ky. screenings	Louisville	4.00	3.25	3.25	3.00@ 3.50
S. E. Ky. lump	Cincinnati	6.50	6.50	5.85	5.25@ 6.25
S. E. Ky. mine run	Cincinnati	3.75	3.35	3.35	*3.00@ 3.35*
S. E. Ky. screenings	Cincinnati	3.25	3.00	2.80	*2.50@ 3.00*
Kansas lump	Kansas City	5.75	5.00	5.00	**5.00@ 5.50**
Kansas mine run	Kansas City	3.75	3.50	3.50	**3.50@ 3.75**
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Pre-Strike Independent	Latest Pre-Strike Company	Dec. 11, 1922 Independent	Dec. 11, 1922 Company	Dec. 18, 1922 † Independent	Dec. 18, 1922 † Company
Broken	New York	$2.34	.....	$7.60@$7.75	$9.00	$7.75@$8.15	$9.00	**$7.75@$8.25**
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.85	9.25@10.50	8.00@ 8.35	9.25@10.50	8.00@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@11.00	8.10@ 8.35	9.25@11.00	8.10@ 8.35
Egg	Chicago*	5.09	7.50	6.90@ 7.40	12.50@13.00	7.20@ 8.25	12.50@13.00	7.20@ 8.25
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	9.25@10.50	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@11.00	8.15@ 8.35	9.25@11.00	8.15@ 8.35
Stove	Chicago*	5.09	7.75	7.20@ 7.60	12.50@13.00	7.35@ 8.25	12.50@13.00	7.35@ 8.25
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	9.25@10.50	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@11.00	8.15@ 8.35	9.25@11.00	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	7.20@ 7.60	12.50@13.00	7.35@ 8.35	12.50@13.00	7.35@ 8.35
Range	New York	2.34	.....	.....	.....	8.15	.....	**8.25**
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	7.00@10.00	6.15@ 6.30	7.00@10.00	6.15@ 6.30
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 8.00	6.15@ 6.20	7.00@ 8.00	6.15@ 6.20
Pea	Chicago*	4.79	6.00	5.60@ 6.10	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1	New York	2.22	2.75@ 3.50	3.50	3.50@ 4.50	3.50@ 4.25	**3.75@ 4.75**	**4.00@ 4.10**
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.25@ 4.00	4.00	**4.00@ 4.50**	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	2.50@ 3.20	2.50@ 3.00	*2.50@ 3.00*	**2.75@ 3.00**
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.00@ 2.75	2.75@ 3.00	**2.25@ 2.75**	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	1.50@ 2.25	1.50@ 2.00	**1.75@ 2.25**	1.50@ 2.00
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	0.75@ 1.75	2.00	**1.00@ 1.75**	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.25	.....	*2.10*

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**, declines in *italics*.

slightly during November, and that a total of 2,318,000 net tons of bituminous coal was dumped over the piers at the five Atlantic coal ports. In comparison with October this was an increase of 88,000 tons. The improvement was due principally to increased dumpings for bunkers, points inside the capes, and other tonnage, which were 363,000, 357,000 and 708,000 tons respectively. Shipments consigned to New England and exports declined slightly. Cumulative dumpings in 1922 to the end of November stood at 25,760,000 tons against 34,878,000 tons in 1921.

TIDEWATER SHIPMENTS FOR NOVEMBER 1922
(In net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	108,000	33,000	136,000	530,000	10,000	817,000
Exports	.....	21,000	10,000	29,000	13,000	73,000
Bunker	180,000	25,000	17,000	136,000	5,000	363,000
Inside capes	.....	183,000	135,000	39,000	.....	357,000
Other tonnage	516,000	.....	1,000	183,000	8,000	708,000
Total	804,000	262,000	299,000	917,000	36,000	2,318,000

ANTHRACITE

Production of anthracite during the week ended Dec. 9 was 2,038,000 net tons, as compared with 1,819,000 tons in the previous week. Preliminary reports for last week indicate an output of approximately 2,200,000 tons.

November production was 8,385,000 tons, exceeding the output for the corresponding month of 1920 and 1921 by 11 per cent and 18 per cent respectively. Cumulative production for the calendar year is 44,055,000 tons as compared with 84,270,000 tons in 1921 and 81,195,000 tons in 1920.

COKE

Production of beehive coke was 289,000 net tons during the week ended Dec. 9, as compared with 298,000 tons in the previous week. The decrease was principally in the Pennsylvania-Ohio region, although the Connellsville section recorded an increase.

The chief feature in the production of coke in November was an improvement of nearly 30 per cent in the output of beehive coke, which increased from 878,000 to 1,139,000 net tons. The production of byproduct coke continued to increase and reached a total of 2,908,000 tons. This was an increase of 3.6 per cent over the October record and was higher than the monthly average for any of the five years preceding.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (*a*)
(Net tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166,000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,638,000	3,733,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
1921 Monthly average	1,646,000	462,000	2,108,000
Sept., 1922	2,244,000	606,000	2,850,000
Oct., 1922	2,806,000	878,000	3,684,000
Nov., 1922	2,908,000	1,139,000	4,047,000

(*a*) Excludes screenings and breeze.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE
(Net tons)

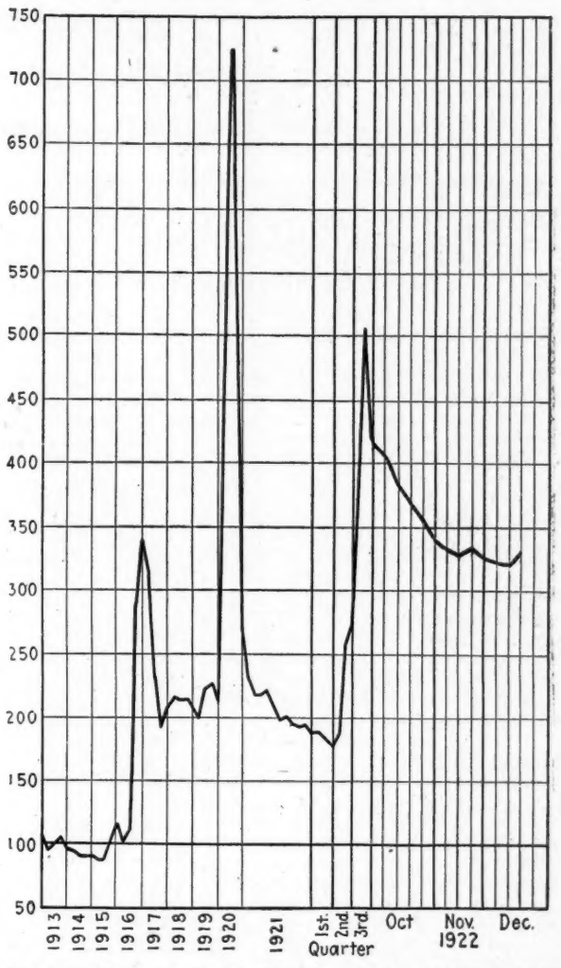
	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,625,000	4,354,000	6,979,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,684,000	2,665,000	6,349,000
1921 Monthly average	2,401,000	706,000	3,107,000
September, 1922	3,223,000 *a*	956,000 *a*	4,179,000
October, 1922	4,032,000 *a*	1,384,000 *a*	5,416,000
November, 1922	4,179,000 *a*	1,797,000 *a*	5,976,000

(*a*) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Coal Cars
Week ended Dec. 2, 1922	845,219	186,158
Previous week	955,495	202,032
Same week in 1921	741,849	136,584

	Surplus Cars All Cars	Coal Cars	Car Shortage	
Nov. 30, 1922	5,595	.....	133,786	42,848
Nov. 23, 1922	5,306	.....	152,577	43,683
Same date in 1921	283,000	133,000	.....	.....



Coal Age Index 336, Week of Dec. 18, 1922. Average spot price for same period, $4.07. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Dec. 2, 1922 Inclusive	Week Ended Dec. 2, 1922
U. S. Total	45.6	55.7	....	....
Alabama	63.5	64.6	84.2	(*a*)
Somerset County	55.5	74.9	35.7	33.9
Panhandle, W. Va.	55.3	51.3	56.6	50.6
Westmoreland	54.9	58.8	69.7	71.2
Virginia	54.8	59.9	57.4	46.0
Harlan	53.3	54.8	21.2	27.8
Hazard	51.7	58.4	16.5	22.3
Pocahontas	49.8	60.0	35.8	34.7
Tug River	48.1	63.7	25.7	42.3
Logan	47.6	61.1	25.6	22.3
Cumberland-Piedmont	46.6	50.6	34.4	47.7
Winding Gulf	45.7	64.3	30.7	34.6
Kenova-Thacker	38.2	54.3	42.1	41.1
N. E. Kentucky	32.9	47.7	28.0	22.0
New River	24.3	37.9	31.2	30.2
Oklahoma	63.9	59.6	62.7	52.6
Iowa	57.4	78.4	72.8	67.6
Ohio, Eastern	52.6	46.6	42.5	38.3
Missouri	50.7	66.8	73.2	86.7
Illinois	44.8	54.5	49.9	55.8
Kansas	42.0	54.9	53.2	48.0
Indiana	41.4	53.8	37.7	(*a*)
Pittsburgh†	41.2	39.8	42.2	50.0
Central Pennsylvania	39.1	50.2	55.6	50.5
Fairmont	35.3	44.0	41.0	50.4
Western Kentucky	32.5	37.7	33.4	26.1
Pittsburgh*	30.4	31.9	56.5	55.3
Kanawha	26.0	13.0	15.6	18.0
Ohio, southern	22.9	24.3	38.6	40.2

* Rail and river mines combined.
† Rail mines.
(*a*) No report.

Foreign Market And Export News

British Market Retains Activity Despite Record-Breaking Production

Production of coal in Great Britain set a new high mark for the year during the week ended Dec. 2, when 5,573,000 gross tons were mined, according to a cable to *Coal Age*. The output during the preceding week was 5,472,000 tons. Despite the heavy production the better fuels are scarce and the market is strong.

The approach of Christmas and a slight improvement in the European exchanges has led to better foreign buying in the Welsh market. The rather depressed state at Cardiff during previous weeks was largely due to foreign holding-off in anticipation of lower prices and better exchanges.

Some classes are difficult to secure, namely, Durham gas and cooking coals which are heavily booked. While steam coals are well booked up, smalls are still rather plentiful and weak. Owing to stormy weather there has been some delay in shipping arrivals, but as there is abundant tonnage waiting the collieries have not suffered and shipments have been well up to recent average.

Business continues to follow satisfactory lines in the Scotch coal trade, the turnover being good and prices well maintained at recent weeks' level. The foreign market is steady. There is a rather better demand in evidence for supplies to home consumers.

Export Clearances, Week Ended Dec. 9, 1922

FROM HAMPTON ROADS

For Chile:	Tons
Dan. SS. Nordkap, for Taltal	2,161
Br. SS. Cento, for Nuevitas	3,899

FROM PHILADELPHIA

For Cuba:
Am. Schr. Balsa, to Sagua la Grande ....

Demand More Brisk and Prices Jump at Hampton Roads

Demand was more brisk at Hampton Roads, but supplies continued to diminish, and prices took a jump. Shippers were preparing for the usual holiday slump in the movement of coal while a dull tone pervaded the market. Though the demand was livelier, shippers did not have stocks to supply it.

One cargo for South America, the first in many months, added a new angle to the trade. It was regarded, however, as simply a sporadic movement on the part of a ship which preferred this cargo going to South America light.

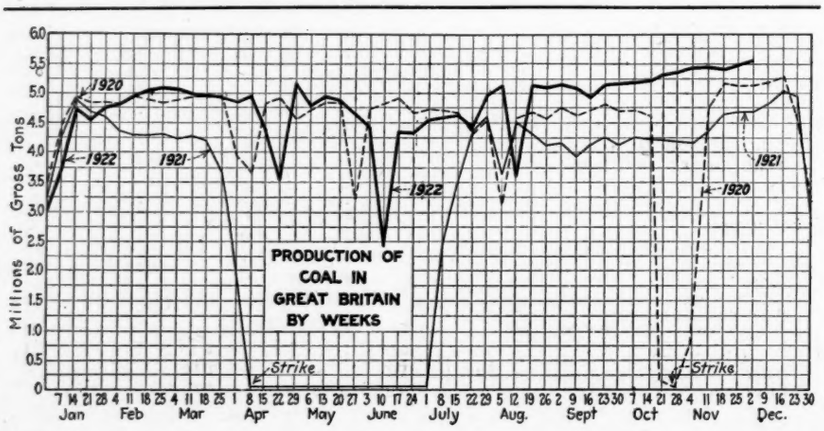
United States October Coal Exports By Customs Districts

(In Gross Tons)

	Bituminous	Anthracite	Coke
Maine and New Hampshire	62	34	113
Vermont	791	732	1,128
Massachusetts	.....	2	.....
St. Lawrence	82,369	102,905	515
Rochester	101,561	80,641	.....
Buffalo	284,352	198,096	20,802
New York	556	17,066	628
Philadelphia	14,037	4,217	1,031
Maryland	4,866	.....	.....
Virginia	47,376	.....	.....
South Carolina	10,283	.....	.....
Florida	5	.....	40
Mobile	268	.....	.....
New Orleans	998	24	1,479
Sabine	10	.....	.....
Galveston	180	.....	8
San Antonio	86	.....	.....
El Paso	1,647	121	1,033
San Diego	12	1	.....
Arizona	1,961	25	4,472
San Francisco	100	.....	12
Washington	1,881	1	.....
Alaska	4	.....	.....
Dakota	705	.....	234
Duluth and Superior	2,279	56	104
Michigan	124,332	64	5,904
Ohio	1,048,704	1,014	1,110
Totals	1,729,425	404,999	38,613

Hampton Roads Pier Situation

	Week Ended Dec. 7	Week Ended Dec. 14
N. & W. Piers, Lamberts Pt.:		
Cars on hand	701	529
Tons on hand	49,953	35,071
Tons dumped for week	77,788	107,367
Tonnage waiting	8,100	10,350
Virginian Ry. piers, Sewalls Pt.:		
Cars on hand	902	928
Tons on hand	50,400	50,950
Tons dumped for week	82,821	77,571
Tonnage waiting	14,638	14,800
C & O piers, Newport News:		
Cars on hand	506	479
Tons on hand	25,800	23,950
Tons dumped for week	36,017	44,818
Tonnage waiting	325	16,493



Coal Paragraphs from Foreign Lands

INDIA—The market, though dull, is steady. There is no inquiry from mills and railway companies. Stocks are sufficient. The latest quotationss are: Bengal first, Rs.28; Bengal good second, Rs.26@Rs.27; English, Rs.38; and African, Rs.27½.

September Consumption in France

	Metric Tons Sept., 1922	Metric Tons 1st 9 mos. of 1922
Coal		
Production	2,719,722	23,470,357
Plus imports	1,691,574	16,424,694
	4,411,296	39,895,051
Less exports	425,972	1,564,473
Consumption	3,985,324	38,330,578
Coke		
Production (at collieries)	80,151	717,428
Plus imports	420,921	3,721,301
	501,072	4,438,729
Less exports	46,960	337,257
Consumption	454,112	4,101,472
Briquets		
Productions (at collieries)	241,147	1,996,821
Plus imports	117,002	1,048,711
	358,149	3,045,532
Less exports	7,805	68,730
	350,344	2,976,802

The importance of French coal exports in September—524,972 tons, of which 208,430 tons went to Spain and 103,755 tons to Belgium—is a consequence of the diversion to North America of a substantial tonnage of British coals.

Pier and Bunker Prices, Gross Tons

PIERS

	Dec. 9	Dec. 16†
Pool 9, New York	$7.75@$8.00	**$8.00@$8.25**
Pool 10, New York	7.25@ 7.50	**7.40@ 7.75**
Pool 11, New York	6.25@ 6.50	**6.75@ 7.25**
Pool, 9, Philadelphia	7.55@ 7.90	**7.80@ 8.10**
Pool 10, Philadelphia	7.00@ 7.25	**7.30@ 7.50**
Pool 11, Philadelphia	6.60@ 6.80	**6.65@ 6.85**
Pool 1, Hamp. Roads	7.65@ 7.75	**7.75@ 8.00**
Pools 5-6-7 Hamp. Rds.	7.65	**7.75**
Pool 2, Hamp. Rds.	7.75@ 8.00	**7.75@ 8.00**

BUNKERS

Pool 9, New York	$8.15@$8.40	**$8.40@$8.70**
Pool 10, New York	7.65@ 7.90	**7.80@ 8.15**
Pool 11, New York	6.65@ 6.90	**7.15@ 7.70**
Pool 9, Philadelphia	7.90@ 8.20	**8.15@ 8.35**
Pool 10, Philadelphia	7.35@ 7.50	**7.65@ 8.05**
Pool 11, Philadelphia	6.80@ 7.10	**6.85@ 7.15**
Pool 1, Hamp. Rds.	7.75	**7.75@ 8.00**
Pool 2, Hamp. Rds.	7.75@ 8.00	**7.75@ 8.00**
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	39s. 3d. f.o.b.	39s. 3d. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	50s. t.i.b.	50s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria	42s. f.o.b.	**43s.** f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to *Coal Age*

Cardiff:	Dec. 9	Dec. 16†
Admiralty, large	28s.6d.@29s.6d	*28s.@28s.9d*
Steam, smalls	17s.@18s.	16s.6d.@18s.6d
Newcastle:		
Best steams	25s.6d.	**25s.6d.@26s**
Best gas	24s.@24s.6d	**24s.@25s.**
Best bunkers	23s.6d.	*22s.6d.@23s.6d*

† Advances over previous week shown in **heavy type**; declines in *italics*.

North Atlantic

Demand Increases Daily; Urgent Buying Boosts Prices

Tight Market Brings Orders Awaiting Bottom Prices—Better Grades Scarce —Car Shortage Blasts Low-Price Hopes—More Transit Troubles Not Unlikely.

Demand is growing day by day and urgent purchasing at increased prices is in evidence on every hand. As usual, tight market conditions have released orders held against the time when the bottom should have been reached. Better grades are almost out of the market. Another drain on the supply has been the call for domestic coal in the East to be used as a substitute for anthracite.

Poor car supply is playing havoc with consumers' hopes of lower prices. A foretaste of wintry weather has made it apparent that additional transportation difficulties are not unlikely and buyers are seeking to cover their requirements for the next few weeks.

BALTIMORE

The market has tightened more rapidly during the past ten days than in any similar period for several months past. The demand has been growing day by day and urgent purchasing at increasing costs is in evidence on every hand.

Car supply, or rather lack of it, is playing a decided part in the situation. From the mines come reports that particular sections have been running as low as 15 per cent supply on many days, and some operations have fallen below this. At the same time both large and small consumers are on the market in increasing number and are taking up coal in many cases without regard to quality.

At this writing there are quotations from the fields for Pool 71 as high as $6. Pool 9 is bringing $5 readily and has run above that mark in several sales. The average quotation on Pool 10 is around $4.50 and on Pool 11, $4@$4.25. Unclassified coals are selling generally up to $3.75@$4. Gas lump is in demand around $4.50 and run of mine, $3.75@$4.

NEW YORK

A gradual betterment has taken place in the local market. Quotations have advanced, following an increased demand and although car supply is about as bad as it can possibly get, there is no shortage of coal, except in the better grades.

Bituminous is now being burned successfully by many persons thanks to the orders of the State Fuel Administration, who heretofore have shunned it, and it is believed will continue to be used by many, especially if it can be purchased at a lower cost than the hard coals. Quotations for the screened coals range $6@$6.75, and take the Pittsburgh or Westmoreland freight rate. This phase of the market is getting to be an important feature.

Consumers who neglected to stock up when advised to do so are now rushing into the market, only to find that the better grades are taken up.

British coals are coming forward but in small volume. Custom House reports showed that during the first five days of last week two cargoes of approximately 7,600 tons consigned to a well-known wholesale coal house reached this port. Southern coals are stronger both in prices and demand. There is a good volume moving.

Coke is steady. One house quoted domestic coke—egg and stove sizes—around $10.50 at mine, and chestnut size around $10, run of oven coke, $7.25, and foundry, $7.50. Other quotations heard included low sulphur gas coal, mine run, $4@$4.50; three-quarter, $4.50@$5; high-volatile steam grades, run of mine, $3.25@$3.75 and slack, $3 @$3.50. Other coals are quoted in the Weekly Review.

UPPER POTOMAC

Shortage of empties has affected Upper Potomac territory more than the Georges Creek district. Still, output is averaging more than in 1921. Georges Creek companies are making a little headway in speeding up production but intimidation is more or less prevalent in some sections owing to the passive attitude of authorities. Though there is not a particularly strong demand, transportation difficulties prevent prompt movement to customers.

PHILADELPHIA

There is the strongest kind of a demand, with the shipper unable to get cars fast enough to meet it, and practically all of them are back on their orders. High-grade coals grow scarcer, and pool numbers are at times lost sight of in the consumers' demand for good steam coal.

The purchaser is now quite insistent for prompt delivery and is inclined to grow impatient, especially since so many of them had expected prices to take a drop, and now that they have risen they feel they should have coal immediately. The railroads continue to absorb much of the production.

Another drain on the supply of bituminous coal has been the call for domestic in the Eastern market. Producers in position to size their output find a ready market with the anthracite retailers, getting $7@$9 a ton for the large sizes. Coke is also in strong demand. Quite a few bituminous producers are going after domestic bituminous trade with the idea of making a permanent market for their fuels, giving printed instructions as to the use of it in homes.

Prices for spot coals have materially stiffened, and under present conditions it does not seem as though the end of the upward movement is in sight.

FAIRMONT

Most mines in the northern part of the state have had to put up with a 30-per cent car supply. Operations loading railroad fuel had about all the empties they needed, mines on the Morgantown & Wheeling on some days loading nothing but railroad fuel, which constitutes the bulk of the business in northern West Virginia at present.

CENTRAL PENNSYLVANIA

Car shortage is acute and operators declare their experience is the worst known from that standpoint. One hundred and twenty-five operators, attended a meeting of the Central Pennsylvania Producer's Association in Altoona on Dec. 13 to take cognizance of the situation. The preparation of the district's case to present to the fact-finding commission was left in the hands of the officers of the association.

With the exception of such operations that get the benefit of assigned cars, the mines in the district are getting only an average of one and one-half day's work a week. Operators generally, have all the orders they can fill to Jan. 1, in view of the difficulty in getting cars.

Prices range a little higher. Pool 9, $5@$5.25; Pool 1, $5.50@$6; Pool 10, $4.25@$4.50; Pool 11, $3.75@$4.25; Pool 71, $5.25@$5.50.

West

KANSAS CITY

An advance of 50c. on Kansas lump and nut and of 25c. on mine run was announced by several dealers in Kansas City, Dec. 14. The announcement followed three days of temperature ranging from 5 to 25 deg. above zero, with a forecast of continued cold—the first promise of protracted freezing weather this winter.

When the drop of $1 a ton on Kansas nut and lump was announced, Nov. 22, this advance was predicted, but, during the weeks the lower prices were in effect there was only a slight increase in demand. All dealers have not posted the advance.

SALT LAKE CITY

Business is quiet. Small sizes are a drug on the market and many cars may be found on the side tracks. Labor is plentiful and men are almost begging for work, according to one operator.

Production for November shows up well. The figures are 489,598 tons compared with 316,750 tons for November of last years. In 1920, 558,982 tons were mined. The total production for the first eleven months of the year is 4,373,470 tons. In 1921 the total for the year was 4,090,395 tons.

DENVER

A snow storm on the western slope of the Rockies blocked traffic shutting off cars from the coal districts. Practically all mines in Colorado including the Crested Butte mines of the Colorado Fuel & Iron Co. are shut down. As a result the freight car situation is more than 50 per cent improved in both bituminous and lignite fields of the state. The anthracite mines are still inactive on account of car shortage.

Anthracite

Deluge of Retail Orders Comes with Wintry Weather

Dealers Unable to Meet Demand—Domestic Receipts Gaining—New York Fuel Edict Booms Buckwheat Sales, Firming Up Smaller Steam Sizes.

Cold weather has deluged retailers with orders. Dealers are unable to cope with the demand and while domestic shipments are being received in larger volume the use of substitutes is increasing. The edict of the New York State Fuel Administrator requiring 25 per cent substitute fuel with each domestic order is booming the sale of buckwheat and has about cleaned up all available tonnage. This also has firmed up the smaller steam sizes.

Independent coals are not being bought heavily by retailers in the Eastern section because of the high quotations. Canadian buyers, however, are offering fancy figures for prompt shipment.

BUFFALO

Supply is not increasing; it had been decreasing before the order came to cut it off so that New York City's poor would not suffer. But the natural gas supply is good yet; if it lasts there will be no real difficulty.

Shippers profess a degree of indifference because so many consumers refuse to buy substitutes.

The price of independent anthracite is going up. It has always been $12 or more at the mines, but is now in some instances bringing $14. Jobbers who are in that trade say that even at that price it is next to impossible to get any coal unless a buyer goes to the mining offices and insists on car numbers.

The Lake trade is practically at an end. The sudden cold weather, followed by snow, has about closed the interlake passages. The last eight cargoes, 59,800 tons, all cleared for Milwaukee, making 117,100 tons in December, a season total of 1,064,180 tons, as against 3,810,315 tons in 1921.

BALTIMORE

The situation as to hard coal is most discouraging. When November showed a decline in the number of cars shipped to Baltimore as compared with the movement in October, the promise was made to dealers here that December would see an increase. The first half of the month has been the exact reverse and the prospect now is that the December movement will fall below that of November.

With much colder weather and occasional snows the increase of emergency cases for dealers to handle is noted. The dealers to date have handled the situation remarkably well by distributing only small lots and in many cases insisting that consumers with hot water and steam plants use bituminous coal as a substitute. The dealers are not at all impressed in many cases with the public appeal to the gallery of a representative of the Maryland Fuel Distribution Committee who has given out interviews to the papers, stating that he would "demand 100 per cent cooperation on the part of the dealers, or know the reason why." It has been mildly suggested by some of the hard coal merchants here that the gentleman could much better devote his energies to the purpose for which the commission was largely created, namely securing shipments from the mines to those dealers here who are without coal or who have but little.

BOSTON

Most of the retailers are dragging along on the bottom, so far as supply is concerned, and if there be further bad weather the situation will be serious. Tows have been unmercifully delayed along the coast and every shipper is far behind program. To add to the difficulties the movement from the mines to tidewater is very slow and the volume available for distribution is disappointingly small.

All-rail shipments also are discouraging. The Massachusetts Emergency Fuel Administrator has seen fit to attack in the press the management of the railroad that has made by far the best showing in New England, both rail and water routes considered, and the trade is disturbed over what it considers to be unfair criticism.

NEW YORK

Orders of the State Fuel Administrator requiring consumers to take 25 per cent substitutes with orders for domestic coals has tended to reduce the supply of buckwheat at the terminals as well as in the retail dealers yards and to tighten up considerably the supply of rice and barley. Rice is now the long size of the steam coals.

A few days of cold weather and a slight snow storm caused an increased demand for domestic coals which dealers were unable to meet. Domestic sizes are coming forward in larger volume, however, and with the increased shipments expected because of the discontinuance of Lake shipments the Metropolitan area is due to receive considerable more coal.

Many dealers are not buying any more independent coals than necessary because of the high quotations. No yard has got more than a week's supply on hand and it was the opinion of some coal men that if shipments of all kinds of fuel should be tied up by a storm or otherwise there would not be more than four days' supply on hand in this city.

The fields are being honeycombed for coal. It was said that buyers representing Canadian dealers were at the mines offering $14@$15 for domestic coals. The larger independents are holding close to the $10.50-market.

The good grades of buckwheat are bringing better prices than company circular and some were being offered it was said at about $7.75 alongside.

PHILADELPHIA

An event in the market this week was the sudden demand for buckwheat as a domestic fuel, which about cleaned up all available tonnage. For several weeks past, after having been laggard since summer, this size began to improve in demand, but the climax was just reached this week. Independent coal quickly went to $4 and over, quotations as high as $4.75 being heard. Companies have no more room for new business. The sudden demand has been due to the winter weather, as when the dealers could no longer supply larger sizes the public simply took what was to be had.

There has also been a strong domestic movement of all kinds of fuels, including mine run and sized bituminous, and various kinds of coke, all of which have been finding a ready market. Retail prices on bituminous coal run $9@$16 a ton, as some of the sized bituminous is just as costly as anthracite.

If anything there has been a slight improvement in anthracite shipments, but it is too early yet to note the effect on the market. In the steam sizes rice and barley have of course showed additional strength, due to the run on buckwheat, and most shippers are able to move heavier tonnages at company prices.

South

BIRMINGHAM

Demand was a little better within the last week, railroads buying some tonnage in the spot market for stocking to carry them through the holidays, and a little improvement also was reported in the general demand from industrial sources. Current orders together with contracts are sufficient to move all the coal being mined at this time. Activity in the domestic market is more marked with a recurrence of cooler weather, the demand for household fuel being regulated pretty much by the thermometer readings. Regardless of the fact that yards are yet without stocks of consequence there seems to be little uneasiness due to this condition.

Buying has not been stimulated sufficiently to affect prices and quotations are the same as a week ago.

Car supply continues bad, averaging from 50 to 60 per cent of equipment ordered by the mines. Production is at the rate of about 345,000 tons per week, which has been the basis of operation for several weeks past. Indications point to steady work through the holidays, with the loss of only Saturday preceding Christmas and Christmas Day.

VIRGINIA

Production in southwest Virginia decreased steadily during the first part of December, due to failure of the railroads to supply enough empties, which has reduced production to approximately 130,000 tons a week, or about 46 per cent of possible production. A number of mines have increased their coke output in order to curtail idleness.

Chicago and Midwest

Real Winter Wakens Whole Coal Market

Brisk Demand for Steam and Domestic Is Held Down by Shortage of Cars—Prices Strengthen Some—Blow-Up of Indiana Strike Is Noted Widely.

General market improvement was noticeable throughout the Midwest during the past week. The real winter which has clinched into the countryside is having its effect on almost all coals from big lump and anthracite down to slack. The ever-present affliction just now is a short car supply. In Illinois, Indiana and Kentucky, most railroads have given less than 35 per cent service during the last ten days and this limits output to a point where even the lowest grade coal is in some demand at slightly ascending prices.

A pronounced movement to stock by railroads and industrials takes all the steam coal there is. This, plus comparatively light production, is the reason why the price of screenings is following domestic sizes on the upward trend. The flattening of the threatened strike in Indiana had not had time by the end of the week, to have its full effect. There is no doubt that a general rush to buy was started two weeks ago in the Indiana market territory. Its subsidence now probably is absorbed in the general awakening of trade.

CHICAGO

The market on all coals picked up noticeably during the past week here. Domestic trade was lively all through the week because of the wind and cold, thus giving the producers of second grades of domestic sizes a chance to stiffen up their prices and collect. Prices on best southern Illinois stayed at $5.50 for lump while central Illinois got strong at $4@$4.50 and pushed hard for a rise to $5. Indiana domestic coals sold as fast as they could be produced. The threatened strike in that state did not develop but there was no sinking of the market as a result of this blow-up.

Steam demand freshened along with domestic. Southern Illinois screenings rose to an average close to $2.75 and showed signs of going higher. The steam sizes from other fields displayed the same tendency, though Standard district and Fifth Vein Indiana screenings remained under $2. A little stocking is going on now.

There has been no marked car or railroad power improvement in any of the fields tributary to this market so that supply has hardly kept up to demand. The stocks of coal on hand in industrial storage yards as well as dealers' bins are small. Thus the countryside has nothing upon which to fall back if a heavy snowstorm were to hit this section tying up traffic.

WESTERN KENTUCKY

Car supply in Western Kentucky has slumped, and reports through Dec. 11 show an average for the month of 30 per cent on the Illinois Central, 19 per cent on the Henderson and 26 per cent on the O. & N., divisions of the L. & N.

Short car supply along with cold weather has resulted in prices quoted being a bit higher, as a result of increased demand of utilities, industrials and retailers. Retailers are meeting with the best business of the year, and are ordering freely. Quotations reported from some operators are considerably higher than the general market, and are perhaps shaded a bit in acceptance of business, as open market quotations are not so much higher than those of last week, screenings showing decided improvement, with lump 25c. a ton higher than the low of last week, while mine run is unchanged.

Present quotations show screenings $1.65@$2, as against $1.25@$1.75 last week; mine run, $2@$2.50, unchanged; lump, $3.75@$4, as against $3.50@$4 last week. Some 6-in. block is quoted at $4.50.

ST. LOUIS

Domestic showed a little activity the past week on account of colder weather, but this was only temporary and the call was for cheaper grades of coal. Dealers still have their bins full, principally of high grade coal for which there is little or no demand. During the past week between 25 and 50 cars of anthracite and a few cars of smokeless moved in and is in good demand. Smokeless retails at $14.50@$15, and anthracite, all sizes, $16.25.

Locally coke is scarce, but a good tonnage of Alabama byproduct is moving through this gateway, principally chestnut for base burners for country dealers. Country demand for domestic is light on account of a feeling that prices will come down.

Some railroads are anticipating storage, principally the Frisco. It is understood the Missouri Pacific has about 8½ days coal ahead. The Mobile & Ohio has acquired a good storage pile at various points. Shipments for Northern roads are noted passing through the gateway indicating fairly good storage supplies going to other lines.

Retail prices are: Carterville, $9.50; Mt. Olive, $7.50; Standard, $6@$6.75. Coke is $12.50 for byproduct and $12 for gas house.

LOUISVILLE

The coldest weather of the year settled over Kentucky on Dec. 12, when the thermometer dropped steadily, to a temperature lower than ten degrees above zero that night. Retailers on Monday reported good demand, while on Tuesday morning they had so many orders that by 10 o'clock they were taking orders for Wednesday alone. This indicates small stocks in hands of consumers, and leads to the belief that there will be a good domestic business all winter.

There has also been better steam plant demand, while utility, railroad and general industrial buying has been a shade better, as a result of improvement in consumption. The western Kentucky market was nervous the early part of the week over a threatened Indiana strike. Unless car supply improves it is believed that heavy demand and short supply will force a stiffer market soon.

Prices quoted in this market show eastern Kentucky prepared at $6@$7.25 a ton, according to size and quality; mine run, $3@$3.65 according to gas or steam and general quality, and screenings, $3@$3.50. Western Kentucky lump is $3.75@$4; mine run, $2 @$2.50 and screenings, $1.65@$2.

It is reported that slightly better shipments of river coal are in prospect, while tonnage moving by barge from Kentucky River mines, to Louisville, a new development in this field, is picking up steadily.

INDIANAPOLIS

Weather hovering slightly above the zero mark tumbled the domestic consumer into the lap of the retail trade last week. Coal bins which never had more than a ton in them during the past few months suddenly went empty and for 48 hours after the blizzard struck the dealers were kept busy supplying the demand. There was a noticeable tendency on the part of the consumers to buy in two- and three-ton lots, something that has not been noticed much this winter thus far. Even with the increased buying there appeared to be no strengthening in prices.

SOUTHERN ILLINOIS

Cold weather the past week has caused an improvement in the movement of domestic sizes. The steam advanced 25c. per ton. Generally, however, winter has not been severe enough yet to bring the market up to normal. The association operators still maintain their price of $5.50 for domestic sizes, whereas the independents are still down to $3 for nut and $3.50 to $4 for lump and egg, and screenings $2.25@$2.50.

Railroad tonnage the past week was usually good. Just as soon as business gets good the car shortage begins to loom up and the idleness the present week was caused chiefly on account of no cars, whereas a week ago it was no-bills. The Illinois Central has averaged but 20 per cent supply lately. The B. & O. and L. & N. are little better.

Similar conditions exist in the Jackson County and Duquoin fields. A fairly good tonnage of domestic sizes is moving out of the Mt. Olive field to St. Louis, Chicago and the Northwest. Steam sizes are in good demand, with $4 and the country districts $4.50@$5. the exception of nut, which is a little heavy.

The Standard situation showed little improvement. Mines still have a surplus of coal on hand, some mines being long on steam and others long on domestic. Two-inch lump coal that was selling at $2.50 moved to $2.75 and screenings moved up from $1.15@$1.25 to $1.35@$1.40. Railroad tonnage out of this district has been fair the past week but car shortage is getting serious.

Eastern Inland

Boreas Stimulates Market; Unfilled Orders Increase

Steam Market Steadies, Spot Offerings Absorbed—Railroad, Industrial and Domestic Buying Heavier—Car Shortage Acute, with Little Improvement in Sight.

The steam market steadied last week, and spot offerings, troublesome a few days ago, have been largely absorbed. Railroads have increased their purchases and large industrials followed their lead. Colder weather has stimulated the domestic market and unfilled orders are increasing.

Cars are very scarce and there is little chance of immediate improvement. Snowfall and lower temperatures have further affected transportation conditions and several of the lines serving the fields supplying this territory have become badly clogged with loads.

CLEVELAND

Domestic coal consumers are preparing to substitute bituminous coal for anthracite this winter, but they are holding back in laying in stocks now in the hope that more anthracite and Pocahontas will be available later.

Industrial plants are buying for immediate requirements only and most of the manufacturing concerns are fairly well supplied. The hand-to-mouth buying of industrial steam coal is tending to limit market activities and to cause some price recession. More steam coal is being used by the railroads than by any other class of customers, with public utilities also taking a fair amount.

Colder weather is causing dealers to stock more freely. The recent heavy snowfall brought a flood of inquiries from consumers who decided against holding out longer for anthracite supplies. Shortage of gas in the last few days has driven many domestic users to order coal. As this is a soft-coal state, most domestic users are equipped to utilize bituminous to supplement the failing gas supply in cold-weather periods.

Retail dealers are beginning to receive Pocahontas from the mines which had been ordered six to eight weeks ago. They are obtaining Pocahontas mine run at $5.50@$6, and lump at $7@$8.25. Because of freight rates and delivery charges Pocahontas shoveled coal is still quoted at $12.34@$13.

BUFFALO

Trade is very quiet, with prices unchanged. An Allegheny Valley mine owner states that he is selling his output at exactly the same price of a month ago, but there has been marked weakness in some districts. Pittsburgh shippers complain that the Allegheny Valley mines have been underselling other districts, but the latter hold that Pittsburgh has been asking excessive prices.

A number of sales in large blocks have been reported lately. One shipper sold 100 cars to a single consumer, at a margin of only 15c. in the gross. This ought to help a shipper materially, yet experienced jobbers, working for permanency, prefer the course that will make the consumer a regular customer.

Bituminous prices remain somewhat unsteady at $4.75@$5 for Youghiogheny gas lump, $3.75@$4.25 for Pittsburgh and No. 8 steam lump, $3.25@$3.50 for mine-run and $2.75@$3.25 for slack, with slack not as strong as sizes, adding $2.09 to Allegheny Valley and $2.24 to other coals for freight.

PITTSBURGH

Free steam coal, which had a tendency to press on the market a week or ten days ago, has been largely absorbed by some good-sized railroad purchases and the steam coal market is distinctly steadier, though prices are not quotably changed.

Gas coal is easier in tone, on the whole, being bought without difficulty, more frequently at $3 than at $3.25. Some operators, however, will not touch these figures, having $3.75 in mind as their minimum, preferring to confine their production to contract shipments. Few if any monthly adjustment contracts were fixed at less than $3.75 for December.

There is scarcely any demand in the open market for byproduct coal, consumers being taken care of by contract shipments. Contracts involving a monthly adjustment have been adjusted at $3.50@$3.75 for December.

Demand for domestic lump continues very heavy and scarcely a day passes without considerable unplaced tonnage being carried over. Prices up to $5.50 are still being secured sometimes, but in general prices are lower, at $5 or less. Producers with regular customers are obtaining somewhat less, on an average. The Pittsburgh Coal Co. has adhered to $4.50 as its price right along, despite higher prices obtainable, and it is reported now that the company contemplates reducing its price to $4 shortly.

EASTERN OHIO

The visitation of heavy snowfall and lowering temperatures have stimulated considerably the demand for coal. Likewise, car supply and transportation conditions have been adversely affected. Several of the lines serving Eastern Ohio are pretty well clogged with loads.

The district produced during the week ended Dec. 9, 341,000 tons or approximately 55 per cent of rated capacity. This volume is about the same as that for the preceding 6-day week but is 45,000 tons above the output for the corresponding week last year.

At the current rate of production over 50 per cent of output is going to the railroads for fuel, not only to take care of their present increased needs but for storage purposes to safeguard against winter emergencies.

Considerable optimism prevailed a few weeks ago that with the closing of Lake navigation car supply at the mines would show immediate improvement. On the contrary, cars are apparently being loaded to destinations farther away from home, and instead of the car supply situation showing improvement, it is, if anything, growing worse.

Cleveland industries and retail yards received a greater quantity of coal during the week ended Dec. 9 than during any week on record, total receipts being 3,028 cars. Of this, 2,160 cars were consigned to industries and 868 cars to retail yards.

DETROIT

With the season of Lake navigation at an end, a freer movement of bituminous coal to all-rail markets is expected. The increase in supply, so far, has not materialized to any noticeable extent.

Detroit is now receiving a fair amount of bituminous, though shipments are not as great as in recent previous years. A heavy snowfall Dec. 13 exerted a retarding influence on the movement, while lower temperatures imparted a short-lived stimulus to buying, particularly by household consumers. There is virtually no free coal on tracks around town.

Ohio mines are supplying the greater part of the bituminous coal sent to Detroit, although some improvement is apparent in the movement from West Virginia and Kentucky. Smokeless continues in short supply. Hocking lump is offered at $5.50, with egg at $5; mine run, $3.50, and nut, pea and slack, $2.75.

COLUMBUS

Colder weather has stimulated domestic demand but the steam business is somewhat indifferent. Buyers are not showing any particular uneasiness and many people are waiting for lower prices before placing heavy business.

Retail stocks are not large as a rule, but in Columbus and vicinity they are sufficient. Retailers have been doing a much better business with the lower temperatures and buying to replenish is the rule. Prices are steady at former levels with no increase following the dissolution of the fuel administration.

Reports show steam reserves of from 30 to 45 days and this is the reason for slowness in buying. Assigned cars for railroad fuel are still a large item in the commercial field and about 15 to 20 per cent of the total output goes to the carriers.

Little Pocahontas or other smokeless coal is finding its way in. Car supply is short in those fields and the usual amount of free coal for the Western market is lacking. As a result dealers are depending more and more on Ohio and the product of the nearby mining sections of Kentucky and West Virginia.

NORTHERN PANHANDLE

Car shortage is restricting output to less than half of possible production. Though the demand is not so strong, yet market conditions have not materially tended to retard production especially where mines have railroad fuel contracts, which business constitutes the bulk of the business of many northern Panhandle mines.

Northwest

Coal Shipping Season Limps to a Slow Close

Time Extension Is Cut Short by Rough Weather, Spite of Premium Freight Rates — Northwest Relies on Rails Now For Hard Coal Balance.

The shipping season to Northwest docks is practically ended. Rough weather wound it up several days before the expiration of the extension granted in order to get in more of the reluctant anthracite. Only a dozen or so cargoes were still on the way at the end of the week and the allotment of hard coal remained far from filled. Premium rates had been offered to get more shipped. Only 550,000 of the 700,000 tons promised have been received at the Head-of-the-Lakes. Much hope is placed in the railroads to bring in more.

The bituminous situation is better. Cold weather has stimulated the demand for all domestic sizes and has affected the steam market favorably too. Coal is moving out as fast as it has been coming in because dock arrivals have been disappointing all through December.

DULUTH

The last cargoes of coal arrived here early this week, and navigation closed, nearly a week before the extension time allowance on insurance expired. The reason for the early close is three fold. The weather has been most inclement, and boats have taken as much as four days from the Sault. Owners are unwilling to pay high insurance rates and it is reported that there has been a scarcity of coal at lower docks.

It is estimated that 5,800,000 tons of coal arrived here since shipments started after the coal strike terminated. About 5,250 000 tons were of soft coal and only 550,000 tons hard coal. To these figures must be added 416,000 tons of hard coal and 3,500,000 tons of soft which were on the docks at the opening of navigation.

The truest picture of conditions may be obtained more from a statement of stocks on hand Dec. 1 than by shipment figures. On that date there were 2,765,924 tons of bituminous and 145,092 tons of anthracite on the docks. None of the anthracite was strictly speaking "free coal." All is spoken for but it is doubtful where the fuel administrator will order it shipped. Last year on Dec. 1 there were 5,663,477 tons of soft and 871,196 tons of hard coal on the docks. There is more bituminous coal on hand now than was used last winter but only about one-fourth as much anthracite.

Arrivals since Dec. 1 have been small —20 cargoes of bituminous and 10 of anthracite in the last week. Coal is leaving almost as fast as it arrives. It has been stated that docks could ship out all the stocks of hard coal in three days. A meeting in St. Paul with the fuel administrator will decide the fate of the hard coal on docks here.

MILWAUKEE

The last cargoes of the season, mainly anthracite, are on the way to Milwaukee, and the record of receipts by Lake will soon be closed. Dock companies have made every effort to increase their stocks of hard coal and paid as high as $1.10 per ton as a "wild" freight rate to induce steamers to make the late run. The supply of soft coal is sufficient to tide over the winter with reasonable receipts by rail.

Prepared or screened Pocahontas, which has been very scarce, is now coming by rail. It costs the jobber about $12 per ton on track at Milwaukee, which almost puts it in the class with hard coal. Illinois and Indiana screenings have also stiffened in price about 25c., but the added costs of these two grades of coal have not been passed along to the consumer as yet.

Milwaukee will undoubtedly receive an unusual amount of coal by rail during the coming winter. Dealers report a very active demand for all kinds of coal with the advent of low temperatures. The anthracite shortage in Wisconsin is greater than was anticipated, and the state coal commission cautions dealers to discourage the use of chestnut size by furnace consumers, as all of that grade of coal will be needed by people using base-burning stoves.

MINNEAPOLIS

Winter weather has struck the Northwest at last hampering coal transportation. Consumption leaps materially. Yet it has shown but moderate effect upon the wholesale market. Screenings, which have been in desperate shape, have braced to some extent. A continuation of zero weather will certainly help the market for regular sizes. The better grades of soft coal have been going nominally at $5.50, mine price, but with concessions.

The conclusion of the season of navigation has brought but little additional coal for the Northwest. It had been hoped that there would be a rush of hard coal for the last few days, but there was none. There is a total of around 575,000 tons of hard coal of all kinds received on the Duluth-Superior docks for the season, against the allotment of over 700,000 tons, leaving a shortage of something under 150,000 tons. The allotment was assumed to be the absolute minimum for the Northwest.

It is proposed to get enough hard coal by rail to piece out. However, there is no fear of a surplus. Not a single promise, allotment or plan for coal for the Northwest has been fulfilled this year. Hence the all-rail tonnage of hard coal may be out to a third and the period of shipments made not to exceed thirty days.

New England

Market Appreciably Firmer, Prices Up on All Grades

Operators Recently Seeking Orders Now Stick to Business in Hand—Upward Swing May Last Through January—Equipment Shortage Disturbs.

On all sides the situation is decidedly firmer. Operators who a fortnight ago were soliciting orders are now declining to make commitments until progress is made on business already in hand. The Southern smokeless grades also are in better position than a week ago, small accumulations having dwindled until several of the agencies are pressed to clear waiting bottoms. Apparently there is to be a pronounced upward swing that may or may not last through January.

Shortage of motive power is causing grave apprehension in trade circles. On the New England roads the lack of engines is not so noticeable as on the originating lines, but it is all serious enough, and is a most disturbing factor.

At Norfolk and Newport News spot coal has tightened to a marked degree. Thus far there has been nothing like comprehensive inquiry for coastwise shipment, current demand being confined to the several agencies themselves. Reserves here are in reasonably good shape, and even the railroads are not likely to dip into the spot market during December. A few of the textile plants made purchases, especially all-rail coal, before prices advanced, and naturally they are counting on deliveries being made as stipulated. In other words, it will take a pronounced falling off in car supply to induce anything approaching a broad market.

At Hampton Roads spot coal of Navy standard is quoted at $8, with the expectation it will go to $8.25 within a few days. There continues active demand in the West for prepared sizes, and shortage of cars is a factor in reducing shipments to the piers. Practically all the low-volatile grades in central Pennsylvania have been marked up in price during the current week. The more favorably known Cambria coals have already sold up to $5 per net ton at the mines and even medium to low-average Clearfields have brought $3.50 for prompt shipment. In every direction quotations are consistently on a higher level than was the case a week ago. Other spot prices are shown in the Weekly Review.

Cincinnati Gateway

Cold Weather Helps Trade With a Freer Car Movement

Domestic Sizes and Smokeless Holding Up in Price—Softness Develops in Steam and Byproduct Sales — Car Movement Better to Southeastern Kentucky Fields.

Domestic business crowded most of the other trading to the sidelines during the past week, due to the fact that the first signs of continued cool weather arrived opportunely. The market was rapidly growing stale under increasing movement of coals to points that this gateway either serves or is in competition with. Even the flurry over in Indiana with strike clouds in the offing did not have much of an effect and what upward movement there was in price was but momentary.

Early in the month buying by the steel plants had not been of the volume that many were led to expect, so that this force has been latent in so far as bolstering declines is concerned. Firmer prices East probably had the most beneficial effect. River business continues good with heavy tonnages arriving.

CINCINNATI

The smokeless situation has scarcely budged toward weakness while other lines have been affected. Mine-run and screenings are still commanding the $6 level that they have for months. This is due to the small amount that is coming in over the N. & W. and the heavy shipments east from New River. What lump there is for spot sales is coming from the latter fields and the brokers who can get it are asking $7.50-$8 for it.

Efforts made by the traffic committee of the Hazard Coal Operators' Association has shown in a better car supply to the Hazard and Harlan fields and though this has increased proportionately the supplies of domestic coal there has been but little tendency to drop the price. Some egg has been selling down to $5.50 but in offering sizings is the only sign of weakness. Because of slower movement West Virginia coals for the week have held about 25c. above the southeastern Kentucky on all sizings of low volatile.

There has been no change in the retail situation, the drop of $1.50-$2 a ton seemingly having no effect on the prices that were established in late October and held relatively since then.

LOW-VOLATILE FIELDS

New River and the Gulf

Production in the New River territory is not averaging as much as 30 per cent of capacity because of poor car supply by the C. & O. Output is less than 100,000 tons a week, which is insufficient for contract requirements. Demand is fairly brisk at tidewater, though not as large as usual. More coal also could be marketed in the West.

Increased motive power on the Virginian is enabling that road to handle more coal loads and provide more empties, which is reflected in increased tidewater dumpings as well as in slightly increased production by Gulf mines. Scarcely any coal is moving Westward from this region. For all the spot coal excellent demand.

Pocahontas and Tug River

Although Pocahontas mines are producing on a little larger scale than mines in other low-volatile districts, the car supply is keeping output at most mines at not more than a 40 per cent supply. A larger movement to tidewater than to western markets is possible owing to the prompter return of empties from the piers and owing to the fact that cars remain on the line of the home road.

Poor car supply on the Norfolk & Western, which holds Tug River production at 40 per cent of capacity, is keeping many mines in idleness part of the time. Operations have not been impeded by market developments; mines are unable to obtain enough cars to insure a satisfactory movement to Western markets or to meet the demand in the West to which much coal is usually consigned on contract. Prices do not differ materially from those of other smokeless regions.

HIGH-VOLATILE FIELDS

Kanawha

Output is so curtailed by car shortage that there is hardly enough spot coal available to make any difference regardless of market quotations. Car shortage still eclipses the market situation in interest. It is difficult for many companies to keep pace with contract orders, partly because the C. & O. is not permitting the use of its larger cars for western movement.

Logan and Thacker

The C. & O. having failed to increase car supply in the Logan district, mines are forced to operate at irregular intervals, few shipping more than two days a week. Where operations are on any larger scale, coal is stored so that there may be no delay when empties are available. It is difficult to make prompt shipment on contracts, especially in the West, since only certain classes of equipment can be used. Few companies have any free coal.

Mines in the Williamson field also are producing on a 40 per cent basis. With open-tops scarce the average mine is not working over two or three days a week, keeping up production costs even in the face of lower prices. Nearly all the output of the region now available is being utilized in filling standing orders, principally for Western delivery. Where coal is sold on a spot basis the price range, for steam mine-run at least is $3@$3.75. It is not an easy matter, however, to get coal through to Western customers.

Northeastern Kentucky

Prices are holding up, considering general market conditions. One factor is a shortage of empties, and another is irregular operation growing out of the scarcity of empties and other transportation disabilities. Quotations on mine-run range $3@$3.50 and on lump $6@$7.

Coke

UNIONTOWN

Cold weather has not materially strengthened the coal market. The number of sales, however, has been increased substantially. The size of some of the coal orders placed this week seems to indicate that those industrial consumers are taking a lesson from past experiences and are buying more than immediate needs.

There is no general inclination on the part of consumers to anticipate railroad difficulties by laying in a surplus stock at the present market but sales for the past two months have run so greatly to the hand-to-mouth variety that the fact that one or two consumers have shifted to a preparedness fuel policy may be considered significant.

The coke market shows no change, with the exception of a strong demand from the East where heating coke is being used as a substitute for anthracite. Quotations prevailing practically all week are: Steam coal, $2.25@$2.75; byproduct, $3@$3.50; furnace coke, $6.25@$6.75, and foundry, $7@$7.50.

CONNELLSVILLE

The coke market has softened slightly. Furnace is easily available at not over $6.50, against a range of $6.50@$7 a week ago, while foundry has declined 50c. to a range of $7@$7.50.

In the past two or three days a demand has suddenly arisen from the East for coke of almost any description for domestic use. There have been relatively large inquiries in the market and off-coke has been taken freely at the various prices asked. Predictions are being made that high prices will be developed in a few days as a result of this Eastern buying. The blast furnaces are not in the market to any extent for spot or prompt coke. As to the first quarter, they have steadfastly refused to negotiate, expecting lower prices. Valley furnaces have sold foundry iron at $25, furnace, for first quarter as a backlog and it is doubtful whether $7 coke would let them out whole on such sales.

The *Courier* reports production during the week ended Dec. 9 at 127,600 tons by the furnace ovens and 75,210 tons by the merchant ovens, a total of 202,810 tons, an increase of 9,040 tons.

BUFFALO

The coke trade is a trifle firmer, but sellers think the strength will not last. Domestic sizes are hard to get. Local byproduct ovens have none to sell to jobbers, except now and then; furnaces take it all. Quotations: $7.50@$8 for Connellsville foundry, $6.25@$6.75 for furnace and $9.50@$10 for chestnut to families, adding $3.28 to cover freight.

News Items From Field and Trade

CONNECTICUT

The F. A. & D. R. Alling Co., New Haven, wholesale and retail coal dealers, recently increased their capital stock from $65,000 to $150,000.

ILLINOIS

The Carterville Coal & Mining Co., with mines in southern Illinois, Kentucky and Alabama, has opened an office at Cairo.

The Union mine of the LaSalle County Coal Co. opened Nov. 20. This mine has been closed for almost a year following a fire which burned for weeks in the underground workings. The fire defied all efforts to check its progress for many days. Finally, the fire zone was walled off and a new entry was driven around it.

The Sharon Coal Mining Co., of Georgetown, has been incorporated with a capital stock of $200,000. The incorporators are Seymour A. Rhode, Louis Clements, Robert Pettigrew and John Donaldson.

The Lake & Export Coal Sales Corporation of Illinois has taken over the output of two additional mines in Williamson County. This brings the total daily production of the company to 12,000 tons. The sales organization of the company had a meeting in Chicago recently which was followed by a dinner and theater party. Those in attendance included D. S. Gent, president; W. L. Walton, vice-president; G. H. Bridges, sales manager; T. F. Gough, city sales manager; P. C. Joquel, of St. Louis, southwestern manager; R. L. Mackay, G. E. Miller, A. D. Williams, R. E. Morris and L. J. Mellick, salesmen.

The Black Servant Coal Co. of Harrisburg, a new concern, has completed plans for the opening of a **new strip mine** on a 1,000 acre tract of land near that city. The company will install approximately $200,000 worth of new machinery and equipment. The vein is said to be 8-ft. thick and from 10 to 30 ft. underground.

Approximately $300,000 has been paid farmers in the vicinity of Hamel, Madison County, **for coal rights to a new 15,000 acre tract** which has all been tested and according to indications is to soon be the site of a large mine. While all operations during the tests on the tract were made secretly, it is thought that the work is being backed by the **Mt. Olive & Staunton Coal Co.**, which has extensive operations to the north of the site.

Fire at the Consolidated Coal Co. mine No. 8 near Herrin, recently destroyed the coal washer and other top buildings causing a loss of $50,000. The fire will cause the mine to be idle for an indefinite period during which machinery and equipment will have to be replaced.

A creditor's petition in bankruptcy has been filed in the United States District Court against the Conway Coal & Coke Co. by the Flanigan Coal Sales Co., a Delaware corporation; the Black Gem Coal & Coke Co., of Illinois, and the S. & S. Fuel Co., of Illinois. The amount involved is not stipulated. The three petitioners merely declared there is over $500 due them from the Conway Coal & Coke Co., as provided by law.

The Bitumacite Coal Co. of Chicago, has options on property at Mt. Vernon, for its first big plant. Bitumacite is a substitute for hard coal made by a process using bituminous. The first unit of the proposed plant will have a 500-tons daily capacity. Machine shops for the manufacture of machines used in the process will be made there for other plants to be located throughout the country as the business is built up. Mt. Vernon was selected because of its proximity to the coal fields and railroads. It has favorable rates from 10 producing counties in Illinois as well as from mines in Indiana and West Kentucky.

A certified check for $15,000 has been handed to **John M. Brichler**, Belleville, in full settlement out of court of his claim against the St. Clair Coal and Mining Co. of St. Louis, of which he was secretary, for a share of profits which he alleged was due him. The payment was made by **Fred W. Kleine**, president of the company who also paid the City of St. Louis $7,000 in settlement of a $9,000 claim made by the city for coal alleged to have been sold by the company short weight to the city water works.

The Coffeen mine of the Coffeen Coal Mining Co. at Coffeen, Ill., **has been sold to Cosgrove and Co.** This company will operate it hereafter. It is said that the purchaser will spend at least $250,000 in improvements and within a very short time 400 men will be employed. **Ralph Mitchell**, president of the Cosgrove and Co. states that the capacity of the mine will be increased to between 2,500 and 3,000 tons a day. The new management has leases on 1,400 acres in the outer St. Louis suburban belt. The mine is served by the Toledo, St. Louis and Western (Clover Leaf) railroad. J. A. Greene will be superintendent and Harry H. Hickman assistant superintendent.

The Maplewood Coal Co., Farmington, has erected 10 houses in Coynerville, Ill., for homes for miners. It will erect 10 more soon.

John S. Rogers, formerly in the claim department of the Old Ben Coal Corporation at Christopher, has accepted a position in the mine offices at Dowell, of the Union Colliery Co. of St. Louis.

The Gus Blair Coal Co. at Murphysboro, with a branch office at St. Louis, has just been formed by the man whose name the company bears. Mr. Blair has long been identified with the coal business in Jackson County and served two terms as postmaster at Murphysboro.

A new slope mine is to be sunk soon in the vicinity of Marion by **The Bradbury-Scullin Coal Mining Co.** of Marion, a new concern. While nothing definite has been announced about starting operations it is thought the mine will be in operation by late next spring at least. The company is composed of the following: William Christian, John M. Reid, Harry Bradbury and R. P. Scullin, of Marion, and Joseph Stone, of Royalton. Mr. Reid is attorney for the company at Marion.

T. S. Cousins, general superintendent of three mines of the Equitable Coal & Coke Co. at Johnson City, Herrin and Duquoin, is again able to be at his offices after being confined to a St. Louis hospital for some time.

A force of men is laying 8,500 feet of track to connect the **new mine near Alpha** with the tracks of the Burlington railroad. Four loading tracks at the mine and one track for switching purposes will be built. The capacity of the new mine will be 35 cars a day eventually. Three shifts of men are now finishing the bottom and top works. Production is expected to start about Jan. 1.

Charges that the Superior Mining Co. of St. Louis, which dissolved June 9, 1917, **wrongfully mined and appropriated coal** owned by the Southern Coal Coke and Mining Co. are contained in a bill in chancery filed by the latter corporation in circuit court at Belleville, Ill. The amount taken is estimated at 100,000 tons worth $200,000 underground. The bill sets forth that the Superior Mining Co., operating the Superior mine, had gone further than the boundaries of their coal possessions and had filed for record fraudulent maps of its operations.

INDIANA

Coal lands near Terre Haute have been acquired by the Central Indiana Power Co., and Stone & Webster, Inc., of Boston, have been retained to design and construct a power plant at the mine mouth.

The Jasonville Fourth Vein Coal & Mining Co. of Jasonville has been incorporated with capital of $50,000. The directors are Samuel Bradshaw, Robert Hill, Clip Ellingsworth, and Stanley R. Thomas.

The Monroe-Edwards Co., of Peru, has been incorporated. The company has a capital of $10,000 and will deal in coal and other fuels. Directors are John J. Munro, Mary M. Munro and James D. Edwards.

IOWA

The board of education of Davenport, will be supplied with Fulton, Sangamon and Tazewell county coal for the next four months at $6.24 and $6.25 a ton, a price said to be lower than that secured by either the city of Davenport or Scott county, in which Davenport is located. **Last year** the board paid $7.40 a ton.

David Rose, Webster City, has opened a coal mine on his farm at Stratford. The coal deposit is a side vein nearly three feet thick.

KENTUCKY

N. M. Argabrite, vice-president and general manager of the Kentucky and West Virginia Power Co., was in the field recently inspecting the progress being made on the installation of commercial power. He says Big Sandy has commenced to use real good kilowatts. A number of mines in the field are now operating on commercial power. The opening of this new facility for production, he believes, will create an increase of 50 per cent in the production capacity within the next year.

S. S. Stone, of Charleston, was in Ashland recently calling upon the coal trade in the interest of the "West Virginia and Kentucky Coal Inspection Bureau," which is being organized for the purpose of exploiting the coal production of this section, known as the Southern Appalachian area.

MICHIGAN

The P. Koenig Coal Co., of Detroit, was indicted by a federal grand jury Dec. 8 on **charges of getting preference shipments** of coal alleged to be for hospitals, but which the company is said to have **sold to its regular customers.** There are 15 counts to the indictment, each alleging a separate offense, and the penalty for each is a fine not to exceed $20,000. The specific charge is violation of the Elkins act, a measure intended to put teeth in the decisions of the Interstate Commerce Commission.

MISSOURI

The Curran Coal Co. has been incorporated at St. Louis with a capital stock of $10,000 and will mine and deal in coal and other fuel products at wholesale and retail. The shareholders are G. W. Curran, W. H. Hubeli and E. A. Blaydes.

The Mitchell-Lovell Coal Co. has been formed at Huntsville with a capital stock of $9,000 and will develop coal mining. The incorporators are W. E. Mitchell, A. D. Lovell, E. B. Lovell and M. E. Mitchell.

Gose & Austin, who have been exploring north of Spickard, have unearthed a vein of coal of good quality. A shaft will be put down at once and coal removed for commercial purposes. It is believed that a much larger vein is 50 ft. lower than the present stratum. The promoters, together with others, have formed a corporation with David Gose, Cody Gose, L. A. Austin and Miss Irene Austin as stockholders.

The Otterville Mining Co., which was organized at Otterville a few months ago to prospect for coal, started to sink a mine and after going 50 ft. encountered tunnels and workings of some old abandoned mine. Three stone hammers or mauls have been found which differ from any now found in this section.

The Penrod Coal Mining Co. has been organized at Sedalia with a capital stock of $30,000. The company will mine and sell coal at wholesale and retail and also will mine and sell clay and manufacture the same into various kinds of products. Boring for oil and gas and marketing the same also will be undertaken by the new company. The shareholders are V. O. Bay, I. F. Holly, E. H. Milton, J. G. Love, H. E. Fricke, F. E. Hoffman, Sr., E. H. Shyre, J. E. Cannaday, W. L. Sprecher, C. S. Marshall and E. Schald.

Dickinson Brothers, of Kansas City, who are mining coal on the Dr. Bond farm, near Eve, have had a laboratory test made of the coal and it reveals that the black diamond is of exceptional quality. The Kansas City laboratory that made the test reports that the coal is superior to either the Cherokee coal or the semi-anthracite coal. Dickinson Brothers have mined and shipped about 100 cars of the coal, finding a ready sale for it and with the laboratory test now on hand they expect to mine it on a much larger scale and are making preparations to increase their force and output.

NEW YORK

The West Virginia Coal Co., of Richmond, Va., has opened an office at 149 Broadway, New York City, with W. H. Doll as manager.

The New York branch of the **Foreston Coal Co.**, of Scranton, Pa., formerly located at 103 Park Ave., has been removed to more convenient and spacious quarters at 136 Liberty St. This office is under the management of Irving Sabasevitz.

The Ingersoll-Rand Company and the A. S. Cameron Steam Pump Works have opened a branch office at 718 Ellicott Square Building, Buffalo, where the usual service may be obtained by customers of these companies.

OHIO

Visitors to the Cincinnati market recently were **J. W. Darville**, sales manager for the Wentz Coal Co., Philadelphia; **Ernest W. Congelton**, of the Fayett-Jellico Coal Co., Anchor, Ky.; **John Crosniak**, of the Federal Coal Co.; **S. W. Riddle**, of the Riddle Coal Co., of Chattanooga, Tenn., and **E. L. Johnson**, of the Climax Coal Co., of Shamrock, Ky. Mr. Johnson bought his usual carload of gifts for the miners and their families which his company gives away at Christmastide.

The Monaco Coal Mining Co. has been chartered with a capital of $100,000 to mine and sell coal near Robyville. Incorporators are Oliver Monaco, Domenick Di Rienzo, Jesse Beck, Sieto Ferrusi and Juliette Monaco.

The Lignite Products Engineering Co., of Dayton, has been incorporated with a capital of $100,000 by H. M. Cotton, Phillip Trautman, John E. Neumaier, I. M. Hilgeman and Thomas H. Ford.

The Trio Coal Co., which has offices in Lincoln Inn Court, Cincinnati, was recently incorporated under the Ohio laws and with **G. M. Shoemaker** as the leading spirit.

A branch of the **J. P. Burton Coal Co.**, of Cleveland, is in the First National Bank Building, Cincinnati, with **R. D. Quickal** in charge.

The Pittsburgh & Ohio Coal Co. has taken quarters in the Union Central Building, Cincinnati.

William Howells, of the **St. Paul Coal Co.**, Bettsy Layne, Ky., and **Bert Fasinola**, of the Scott Coal Co., Silush, W. Va., were recent visitors to the Cincinnati market. O. W. Gardiner, president of the Chesapeake & Virginia Coal Co., Lynchburg, Va., was a visitor recently to his branch office here.

Installation of a plant at Powhattan, in the Belmont County field of Ohio, by the **Cleveland & Western Coal Co.** will provide space for the **storage of 1,000,000 tons of coal.** The company began construction about a year ago on what will be one of the largest coal mining plants in the world. It is expected to be ready for operation next autumn. Four openings are being driven and when the plant is completed it will have an output of 8,000 tons daily, requiring 1,000 miners. The plant will cost about $5,000,000.

Judge A. G. Hughes of Preston County, sitting as special judge in Monongalia County has handed down a decree **awarding the Sprigg Lumber Co. judgments approximately $75,000** in its suit against the American Gas Coal Co. and other defendants. The original indebtedness was for houses built by the plaintiff company for the American Gas Coal Co. near Flickers, notes having been given in payment by the coal company, endorsed by the corporation and a number of personal sureties. When the American Gas Coal Co. went into the hands of receivers, the plaintiff brought action against the endorsers.

PENNSYLVANIA

A mass of live coals believed to have been dropped by a shifting engine started **a fire on Pier 18 of the Philadelphia & Reading Railway Co.'s coal piers** at Port Richmond, Philadelphia, and destroyed the pier. Three alarms were turned in and the fire department fought the blaze for three hours before it was brought under control. Pier 18, a 200-foot span, was entirely destroyed. The monetary loss could not be estimated.

Between 40,000 and 50,000 coal miners still are on strike in the bituminous fields in Somerset County. These men were left out of the strike settlement last autumn. A delegation of the strikers has been sent to Washington to confer with the Department of Labor and President Harding in an effort to end the walkout. As a result four representatives of the Department of Labor have been sent to the strike zone. The miners are employed in former non-union fields which were organized during the strike and this is an issue in the settlement.

A storage bin having a capacity of approximately 10,000 tons of coal is now in process of construction at the Gould Mine of the **Consumers' Fuel Co.**, Finleyville, which is one of the Bertha Coal Co. interests of Pittsburgh. Work on the new storage plant is being pushed rapidly and it is planned to have same completed by the first of January. The Bertha Coal Company recently acquired additional acreage at Finleyville so that the output of the Gould mine will be materially increased.

Discovery of a rich deposit of cannel coal was made recently in Somerset County on lands of Ira Barron and Guy Critchfield. The deposit is said to be 5 ft. thick and overlays 18 in. of bituminous coal, resembling Pittsburgh gas coal. Samples were sent to New York for expert analysis and reports on the analysis were highly gratifying. Orders have been received at $5 per ton for more than the operators are able to produce. The coal contains much volatile matter and burns with a bright flame. It is free from dust and resembles anthracite. The extent of the vein has not yet been determined.

The United States Circuit Court in Philadelphia has fixed Jan. 3 for a hearing on the protests of Isaac T. and Mary T. W. Starr, holders of Jersey Central R.R. stock, **against the sale by that company of the Lehigh & Wilkes-Barre Coal Co.** to the Jackson E. Reynolds syndicate of New York, under the Reading dissolution plan. A letter from A. M. Myers, special assistant Attorney General, which was made a part of the order entered Dec. 5, revealed that the Department of Justice had made an investigation of charges by the Starrs that a large number of the individuals in the Reynolds syndicate were not eligible under the law to buy the stock.

Shipments of anthracite for November, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 6,420,102 gross tons, as compared with 5,314,014 tons during the corresponding month last year, an increase of 1,106,088 tons. Shipments by originating carriers were as follows, in gross tons:

	November, 1922	October, 1922
P. & R. Ry.	1,224,990	1,266,092
L. V. R. R.	1,109,449	1,166,195
C. R. R. of N. J.	583,835	617,668
D. L. & W. R. R.	896,182	936,375
D. & H. Co.	876,861	828,216
Penna. R. R.	546,214	579,306
Erie R. R.	706,747	701,270
N. Y. O. & W. Ry.	161,660	179,865
L. & N. E. R. R.	314,164	292,941
Totals	6,420,102	6,567,928

The C. C. S. Coal Co., of Scranton, has been chartered with a capital stock of $25,000. C. H. Crocker, Glenburn, is treasurer and one of the incorporators, the others being W. A. Christ, Scranton, and S. R. Smith, Taylor. Its purpose is the mining of anthracite.

The following bituminous coal companies have recently been incorporated: **Clara Fuel Co.**, Pittsburgh, $5,000; M. S. Gaines, Pittsburgh, treasurer and an incorporator, the other incorporators being I. L. McChesney and H. J. Kenna, also of Pittsburgh. **Culler Gas Coal Co.**, Charleroi, $10,000; J. B. Culler, Belle Vernon, treasurer and an incorporator, the other incorporators being Tom P. Sloan and E. M. Fitzgerald, Charleroi. **Blanchard Moshannon Mining Co.**, Pittsburgh; $300,000; Frank H. Robinson, Pittsburgh, treasurer and one of the incorporators, with Henry E. Cole and A. C. VanKirk, Pittsburgh. **Coal Ridge Coal Co., Inc.**, Clearfield; $30,000; Edward B. Chase, Clearfield, treasurer; incorporators, Milford Bratton, E. B. Chase and Arthur D. Cowdrick, Clearfield. **Corey Coal Co.**, Pittsburgh; $10,000; E. L. C. Weimer, Pittsburgh, treasurer; incorporators, E. L. C. Weimer, Mary W. Spencer and Margaret J. Weimer, all of Pittsburgh. **Conemaugh-Kiski Coal Co.**, Latrobe; $50,000; incorporators, D. T. Sipe, James T. Hughes and H. C. Butterbaugh, Latrobe.

The rate for compensation insurance in the anthracite mining industry for 1923 will be $3 per $100 of payroll, or 25c. cheaper than for this year, as contrasted with a decline of 10c. in the rate for bituminous mining. These figures, worked out at the State Insurance Department, represent close study of the anthracite industry and consideration of the accident prevention steps of the last year. They become effective with all compensation insurance Jan. 1. The manner in which rates for compensation insurance in mining have declined is as follows:

Year	Anthracite rate	Bituminous rate
1918	$4.64	$3.75
1919	4.64	3.60
1920	4.10	3.00
1921	3.60	3.00
1922	3.25	2.45
1923	3.00	2.35

In 1916 and 1917 the bituminous rate was $3.83.

In the case of John Zaleski against the Hudson Coal Co., Scranton, an appeal by the claimant from an order of a referee granting a petition for termination of a compensation agreement, the **State Workmen's Compensation Board** dismissed the appeal, affirming the findings and the order of the referee.

UTAH

The United States Fuel Co., Salt Lake City has presented to the industrial exhibition at the state capitol, what is **regarded as the largest lump of coal ever mined.** The lump weighs 10 tons and 900 lbs. and was taken from the company's Black Rock mine. The company had been trying for three months to mine a piece of coal that would be a fitting gift to the exhibition. The cost of mining the coal and placing it in its resting place at the Capitol will run above $2,000, it is estimated. It is believed by experts that the coal will last indefinitely without disintegrating.

Steel City is the name of a new town that is to be built between Provo and Springville as a result of the coming of the steel industry.

Z. C. M. I., Utah's oldest department store, is **giving 150 tons of coal away to the poor** this Christmas as a present. Creed, race or class will not be considered. This is not an advertising scheme and there are no limiting conditions.

WEST VIRGINIA

The Indian Hill Coal Co., of Morgantown, W. Va., has been incorporated with capital of $50,000. The incorporators are Lemuel John, Jr., C. B. Jenkins, Ralph M. Bradford, James E. Gaskin and C. H. Humphreys, all of Morgantown.

W. W. Houston, representative of the Panhandle Coal Co., has been elected vice-president of the **Hampton Roads Maritime Exchange.**

The Red Jacket Consolidated Coal & Coke Co., at Red Jacket, has just completed a new $30,000 brick school house, offering high school courses. The company also is opening up a new mine, on its Mitchell Branch and expects to build a number of houses for the miners.

A loss of fully $50,000 was sustained by the **Consumers Fuel Co.**, at Downs in the Marion County field when a fire destroyed the company store. The origin of the fire is unknown. The company will erect a temporary structure.

Organization of the **Eldee Junior Coal Co.** of Huntington, with a capitalization of $100,000 presages further development of coal property in the Logan region, though Huntington is to be the general headquarters of the company for the time being. Active in organizing this concern were F. S. Landstreet, Jr., M. F. Breslin, Herman Redd and H. L. Ducker, all of Huntington.

Capital stock of the **Wyatt Coal Co.** is to be increased from $100,000 to $200,000, under authority just granted by the secretary of state. John Laing, former chief of the Department of Mines of West Virginia, is at the head of this concern which has been very successful.

Coal property in the Bell Creek section of Fayette County is to be developed on an extensive scale by Montgomery people who have organized the **Bell Creek Bi-Products Coal Co.** The land has been leased for fifteen years. There has been some prior development of this property but through extensive improvements to be made in the near future the newly-organized company will make it possible to produce coal on a large scale. Active figures in the new enterprise are W. H. Thomas, F. E. Smart, Joe Wilkinson, W. H. Koester, G. C. Humphries and C. N. Smithson. Mr. Thomas will act as general manager of the company.

The Davy-Pocahontas Coal Co., with mines at Roderfield in Tug River District, served by the N. & W., has been sold to J. W. Baldwin and others who will in the future operate the property under the name of the Baldwin Pocahontas Coal Co. Officers of the new company are: J. W. Baldwin, president and general manager; Walter Perkins, vice president; R. E. Baldwin, secretary and treasurer. The new owners all are of Graham, Tazewell County. Announcement has been made of changes in the personnel of the management of the **Fire-Creek Smokeless Fuel Co.** and of the **Laurel Smokeless Coal Co.**, these companies having their mines at Lego, in Raleigh County. Roy T. Wright, of Matoaka, becomes general superintendent and B. T. Peck, superintendent, both of these officers to have their headquarters at Lego. Supervision of the engineering work of both companies will be under E. B. Wagner. Mr. Wagner also has charge of the engineering work of the Algonquin Coal Co. and of the Pawama Coal Co.

Major Lunsford, in charge of the mines of Henry Ford, who recently acquired the mines at Twin Branch in Tug River District, located on the main line of the N. & W., and formerly owned by Dexter & Carpenter, of New York, has announced that, effective Dec. 1, it will be the policy of the company to make no profit in the company commissary or company store.

Counsel representing **Peter Radakovitch**, tried and convicted on a conspiracy charge for participating in the Cliftonville mine riot of last July, have filed a **motion to set aside the verdict** and grant the defendant a new trial on the ground that one of the jurors in the case expressed an opinion unfavorable to all defendants prior to the trial. Five affidavits have been submitted in support of the contention of counsel for the defense to the effect that on the Sunday following the verdict in the case of John Kaminski, H. H. Stoops, one of the jurors, expressed the belief that those who participated in the march should be hanged, whether they shot Sheriff Duvall or not and also that anyone connected with the trouble should be hanged.

The large tipple of the **Georges Creek Coal Co.**, near Midland, was destroyed by fire a few days ago, entailing a heavy loss. The company has not determined the origin of the blaze. Operations were suspended for a time by the Georges Creek company, but a month or more ago were resumed.

There is more activity at the present than there has been in some time at the plants of the Gauley Mountain Coal Co., in the New River field, and this company only recently resumed operations at 100 coke ovens, enabling the mines of the company to work about five days a week. Advocates of a strike held out longer at Ansted than at any other point in the New River field, but the strike is a thing of the past at this plant and few of the old men remain.

The Edward Hines coal and lumber interests, of Chicago, have just consummated a deal for the **purchase of 2,000 acres of virgin coal** in the Pittsburgh seam on Indian Run in Monongalia County. Eventually this will result in the expenditure of between $5,000,000 and $6,000,000 for development purposes. The Edward Hines interests were represented in the purchase of the coal from farmers and other owners of small tracts by C. E. Hawker, of Fairmont. It is possible that the coal land acquired will be developed and operations undertaken by one of the larger companies in the Fairmont field, though negotiations have not been completed and hence no details of such a plan are obtainable at this time.

C. A. Allen, of Salt Lake City, one of the mining engineers staff of the Bureau of Mines, has ben assigned to duty in the Pocahontas region as a representative of the Federal Coal Commission for the specific purpose of making a study of waste in coal mining, it having been decided to study that question in West Virginia first.

CANADA

A fire which broke out on the premises of the **Consumer Coal Co.**, at Hamilton, Ont., destroyed a building 200x100 ft. belonging to the company. The owners place their loss at $18,000.

Output of coal from Canadian mines during August, according to a statement issued by the Dominion Bureau of Statistics, amounted to 789,000 tons, a decrease of 69,000 tons from that of July. The output for the first eight months of the year was 7,745,000 tons, which is less by 1,574,000 tons than the average for the same months of the last three years. **Imports in August** were 12 per cent below the record for July. Imports during the first eight months of the year were 49 per cent below the 3-year average for the same period. **Exports in August** were 236,000 tons, as compared with 243,000 tons in July. The record for the calendar year was 25 per cent below the average for the eight months period of the last three years. As a result of the movement of coal during August there was available for consumption in Canada 945,000 tons, as compared with a 3-year average for August of 3,222,000 tons. For the first eight months of the year the amount available for consumption was 12,615,000 tons, as compared with a 3-year average for the same period of 19,452,000 tons.

A number of miners in the **northern Alberta coal field went on strike** Nov. 30 because the operators refused to recognize the United Mine Workers. Operators aver that 50 to 75 per cent of the men are at work, and that the majority of the mines are being worked at close to capacity. The president of district No. 18 has been in the district for some time, and has been very active. On Dec. 1 there was a parade of between three and four hundred strikers through the principal streets of Edmonton. Should the men succeed in forcing their demands, it will greatly strengthen the hands of the union in Alberta, as during the strike in the southern Alberta and southeastern British Columbia fields in the spring and summer of this year, the northern field was able to supply the demand, and there was no real coal shortage.

Coal briquets from Alberta mine slack will be made in the university laboratories at Edmonton. An experimental plant has been set up for the purpose and is now practically completed. All kinds of slack from the Edmonton mines and from mines in other parts of the province will be tried out in the plant and other materials will be tested, including bituminous sands from the Athabasca region.

Stating in a recent address at Ottawa that a strike of coal miners in the United States is expected on April 1 next, **Dr. Charles Camsell, Deputy Minister of Mines**, urged further examination of the possibilities of Welsh anthracite. He also suggested using peat up to the end of October, coal from November to March, and peat again for any remaining period that fuel may be found necessary.

Prospects are that Fort William will have to get through the winter with the **one cargo of hard coal** already received by the James Murphy Coal Co. and the situation is considered serious.

The Toronto City Council has passed a resolution providing that the matter of the unequal distribution of coal in the city be investigated and also a report that 60 per cent of coal sent into western Ontario was unadulterated slate, a large amount of trash and washery, and was being passed out as hard coal.

WASHINGTON, D. C.

In recognition of his appointment as **director of the Maryland Bureau of Mines, Dr. J. J. Rutledge** was tendered a dinner in Washington by thirty-two of his friends who have been associated with him in his work with the Bureau of Mines. Samuel Sanford, editor for the Bureau of Mines, acted as toastmaster. Mr. Rutledge obtained the Maryland appointment as the result of a competitive examination.

The U. S. Civil Service Commission announces that an open competitive examination will be held throughout the United States on Jan. 24 to fill a vacancy in the position of **master electrician at the Navy Yard, Brooklyn, N. Y.** The salary is $12.96 a day. The duties consist of the executive management and direction of an electrical shop employing about 300 men. Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or secretary of the board of U. S. civil service examiners at the post office or custom house in any city.

The U. S. Civil Service Commission announces an open competitive examination for **electrical engineer**, receipt of applications to close Dec. 26, 1922. A vacancy in the dredge construction service, office of Chief of Engineers, War Department, at $4,000 to $6,000 a year, and vacancies in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. The appointee will be in responsible charge of supervision of design, manufacture, testing and installation of all electrical machinery and equipment for Diesel electrical dredges.

The U. S. Civil Service Commission announces an open competitive examination for **valuation engineer** ($3,600-$4,800 a year) and associate valuation engineer ($3,000-$3,600 a year), oil and gas and coal mining. The duties involve estimation of quantities in place, theoretical and market values, values of equipment and cost of development, exploitation and utilization. Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or secretary of the board of U. S. civil service examiners at the post office or custom house in any city.

Traffic News

The I. C. C. on Dec. 7 issued Investigation and Suspension Docket No. 1620, relating to class D proportional rates on coal from West Bank-Mississippi River points to points in Iowa. The commission had ordered a hearing concerning the lawfulness of regulations and practices affecting rates and charges stated in schedules contained in a tariff designated E. B. Boyd, agent: Supplement No. 28 to I. C. C. No. A-1203. Pending a decision the commission ordered that the operation of certain schedules contained in this tariff be suspended and that the use of the regulations and practices therein stated be deferred upon interstate traffic until Dec. 13, as the hearing could be concluded within the period of suspension the commission ordered that the operation of the schedules contained in the above tariff be further suspended, and that the use of the regulations and practices therein stated be further deferred upon interstate traffic until Jan. 12, 1923, unless otherwise ordered by the commission, and no change shall be made in such regulations and practices during the said period of suspension unless authorized by special permission of the commission. It was further ordered that the regulations and practices thereby sought to be altered shall not be changed by any subsequent tariff or schedule until this investigation and suspension proceeding has been disposed of or until the period of suspension and any extension thereof has expired, unless authorized by special permission of the commission.

That the divisions between carriers of rates on bituminous coal to destinations in Michigan, Ohio, Indiana, Illinois and Wisconsin should retain the same relationship as before the Interstate Commerce Commission's report in Ex Parte No. 74 is the contention of the **Baltimore & Ohio, the Norfolk & Western, the Chesapeake & Ohio** and the **Louisville & Nashville** railroad companies. If the divisions which existed on Aug. 25, 1920, were not just, it was due to the disparity resting in their being more favorable to the Michigan lines, the carriers mentioned contend. The changes in transportation and traffic conditions affecting the two groups of lines, that is up to and beyond Toledo, which have taken place since the early days when the divisional arrangement was made, according to these carriers, have been for the most part changes which increased in greater ratio the burden of the lines south of Toledo than that of the lines north and west of Toledo. One respect in which this is not true, it is pointed out, is in the matter of railroad fuel, as to which the Michigan roads, not having coal o ntheir own lines, have had to bear the expense of increased proportions of connecting lines transporting such coal for them. It is declared, however, that such increased burden, although a circumstance entitled to consideration, when weighed in the balance with the increased burdens of the lines south of Toledo, does not depress the scale materially.

The Fort Dearborn Coal & Export Co. won its case in the federal court for the southern district of West Virginia against the Norfolk & Western, being awarded damages in the amount of $17,366.98 by a jury. This was an action brought by the coal company to recover for a quantity of coal confiscated by the Norfolk & Western during the war and while the coal was in transit to the Tidewater Coal Exchange. Judge Harold A. Ritz, who resigned as a member of the West Virginia Supreme Court Dec. 1, appeared for the coal company.

The question of the adjustment as between rates from Illinois and the southwest to Missouri river points and related markets is again before the Interstate Commerce Commission in Docket No. 74289 Lincoln, Neb., Chamber of Commerce vs. Arkansas Central et al. In this complaint the Lincoln interests charge that rates from points in Illinois, Missouri, Kansas, Oklahoma and Arkansas to Lincoln, Neb., are unjust, unreasonable and prejudicial because in excess of the rates from the same points of origin to Omaha.

G. P. Van Sweringen, chairman of the New York, Chicago & St. Louis R.R., was in New York Dec. 14 to confer with officials of the Chesapeake & Ohio. It is reported the Sweringen interests are **seeking control of the Chesapeake & Ohio.** The Van Sweringen Company now operates 1,725 miles of railway through control of the New York, Chicago & St. Louis R.R., Toledo, St. Louis & Western and Lake Erie & Western. Acquisition of the Chesapeake & Ohio would give the company control of about 4,280 miles of road. The Chesapeake & Ohio is one of the largest railway systems in the East. Its control would give the company an outlet to the sea at Fort Monroe, Va., and also access to one of the richest coal fields in the East.

A petition has been filed with the Circuit Court of Monongalia County asking the **removal of Samuel Pursglove as receiver for the Morgantown & Wheeling Ry.**, which operates on Scott's Run in the Monongalia field and which has become an important feeder for the Monongahela Ry. In the petition it is alleged that Mr. Pursglove is discriminating against certain coal operations on the line of the Morgantown & Wheeling by reducing the car supply for such mines in order to increase the supply for his own mines and that he is ineligible to serve as a receiver owing to the fact that he is one of the largest operators on the road and hence is not a disinterested party, which it is asserted is required by law. The action was brought by R. Hugh Jarvis, vice-president of the Morgantown corporation, a holding concern which controls a majority of stock of the Morgantown & Wheeling R.R. Affidavits submitted were signed by James A. Paisley, of Cleveland, controlling the Connellsville By-Products Coal Co., and the Valley Camp Coal Co., owning 140,000,000 tons of coal in the Scott's Run field; B. M. Chaplin, vice-president and general manager of the Chaplin Collieries Co.; Samuel D. Brady, of the Brady-Warner Coal Corporation; Stephen Awkright, general superintendent of the Awkright Coal Co.; Everhart Bierer, president of the Shriver Coal Co., and the Preston County Coal & Coke Co., and by R. L. Scott, general manager of the E. B. Stone Coal Co. The receiver of the Morgantown & Wheeling Railway is president of the Cleveland-Morgantown Coal Co., the Purseglove Coal Mining Co., the Elkins Fuel Co. and the Virana Coal Co. Five of the largest mines on the Morgantown & Wheeling Railroad are operated by Mr. Purseglove. Plans for refinancing the Morgantown & Wheeling Ry. have been announced following the election of a new directorate and of new officers. One of the first steps taken by the new board of directors was to authorize the officers to borrow sufficient capital to completely rehabilitate the road. Through the election of a new director the road has passed into the hands of Josiah V. Thompson, of Uniontown, and his associates. Officers and directors elected were as follows: Josiah V. Thompson, Uniontown, president; R. H. Jarvis, Morgantown, W. Va., vice-president; W. H. Conaway, Fairmont, vice-president; John F. Phillips, Fairmont; Rolf M. Hite, Fairmont; A. A. Thomson and J. R. Thompson, Uniontown; G. P. Russell and F. P. Weaver, Morgantown.

Publications Received

Those who own or are interested in deposits of peat or muck may obtain free copies of the bulletin by addressing the U. S. Geological Survey, Washington, D. C. It was prepared by C. C. Osbon and is published as The Geological Survey's Bulletin 728, **"The Occurrence and Uses of Peat in the United States"** has just been published.

This bulletin, which is the most exhaustive American work on peat and required two years for its preparation, points out the location of thousands of deposits, owned by farmers and other land owners.

The latest official publication issued by the National Association of Cost Accountants is entitled **"Cost Practices and Problems in the Production of Coke,"** by C. C. Sheppard. Copies of the pamphlet may be obtained from the office of the secretary, 130 W. 42nd St., New York. The price to non-members of the association is 75c. per copy.

Recent Patents

Loading-Machine Attachment. John W. Houghton and Thomas W. Harvey, Huntington, West Va., assignors to Steel Products Co., Huntington, West Va., 1,433,012. Oct. 24, 1922. Filed April 14, 1921; serial No. 461,324.

Mine Cage. Nelson A. Michaelson, Uniontown, Pa., 1,433,022. Oct. 24, 1922. Filed Nov. 12, 1921; serial No. 514,623.

Mine Cage. George M. Johnson, Jeanette, Pa., 1,433,459. Oct. 24, 1922. Filed Feb. 24, 1921; serial No. 447,594.

Head Motion for Concentrating Tables. Emil Deister, Fort Wayne, Ind., assignor to Deister Machine Co., Fort Wayne, Ind., 1,433,500. Oct. 24, 1922. Filed Aug. 13, 1918; serial No. 249,663.

Mining and Loading Machine. Edmund C. Morgan, New York, N. Y., 1,430,669. Oct. 3, 1922. Filed Sept. 9, 1915; serial No. 49,689 Renewed March 28, 1921; serial No. 456,208.

Engine Trip for Steam Shovels. C. A. Chancellor, L. C. McMannama and C. E. Houghton, Mindenmines, Mo., 1,430,942. Oct. 3, 1922. Filed Feb. 14, 1921; serial No. 444,751.

Bail for Skip-Hoist Buckets. Wm. E. Hale, Fort Washington, Pa., assignor to the R. H. Beaumont Co., Phila., Pa., 1,430,985. Oct. 3, 1922. Filed May 16, 1921; serial No. 469,918.

Picking Screen. R. W. Johnson, Pittsburgh, Pa., assignor to Roberts & Schaefer Co., Chicago, Ill., 1,431,667. Oct. 10, 1922. Filed March 13, 1922; serial No. 543,143.

Safety Appliance for Mining Cars. Andrew M. Shandor, Lilly, Pa., 1,431,697. Oct. 10, 1922. Filed March 10, 1920; serial No. 364,675.

Loading Machine. Wm. Willcox, Camp Chase, Ohio, 1,431,857. Oct. 10, 1922. Filed Oct. 20, 1920; serial No. 418,166.

Coal-Feeding Mechanism. Arthur C. Glasgow, Decatur, Ill., 1,431,944. Oct. 17, 1922. Filed Feb. 16, 1920; serial No. 356,207.

Portable Apparatus for Elevating and Screening Coal. Paul J. Alwart, Chicago, Ill., 1,432,738. Oct. 24, 1922. Filed July 25, 1921; serial No. 487,397.

Portable Bucket Conveyor. Arthur L. Shaw, Chicago, Ill., assignor to Chicago Automatic Conveyor Co., Chicago, Ill., 1,432,917. Oct. 24, 1922. Filed Nov. 4, 1918; serial No. 260,962.

Automatic Mine Door. James L. Dealy, Chandler, Colo., assignor of one-half to Charles Salsbury, Chandler, Colo., 1,432,972. Oct. 24, 1922. Filed April 10, 1922; serial No. 551,041.

Association Activities

Northeastern Kentucky Coal Association

A general meeting of the Northeast Kentucky Coal Association was held in the Ventura Hotel at Ashland, preceded by a joint meeting of the executive and railroad relations committees in the offices of the association, Gaylord Building, Dec. 7. It was one of the best attended meetings in the history of the association. The newly proposed rules for mine ratings and car distribution were thoroughly discussed, recommendations made and endorsed expressing the association preference for the plan of mine rating used by the N. & W. Ry. prior to CS-31, Revised, known as the engineer system, and the "round robin system" of car distribution, providing therein that on any day a mine receives cars it shall receive its full rated capacity or no cars at all, thereby giving it a full day's run in place of a part day and reduce the increased cost of production caused by a part supply on any given day. The following committee was appointed to cooperate with the general committee, and to represent Northeast Kentucky Coal Association District in all matters pertaining to the Fact-Finding Commission investigation: C. W. Conner, general manager, Elkhorn & Shelby Creek Coal Co., Esco; E. L. Bailey, general superintendent, Edgewater Coal Co., Lookout; R. C. Thomas, superintendent, North-East Coal Co., Paintsville; Cadwalader Jones, Big Elkhorn Coal Co., Ashland; E. R. Price, general manager, Consolidation Coal Co., Van Lear; T. S. Haymond, general manager, Elk Horn Coal Corporation, Wayland; D. H. Putnam, secretary-treasurer, Edgewater Coal Co., Ashland; Secretary C. J. Neekamp to act as secretary. A committee representing each coal producing county in the district was appointed to work with the Kentucky State Tax Commission on the revaluation of coal lands in the state, with the view of equalizing valuations and rendering assistance to the State Tax Commission with respect to proper valuations.

Trade Literature

Sullivan Machinery Co., Chicago, Ill., has issued the following bulletins: Bulletin 76-B, on its **Turbinair Hoist, Double-Drum Type**; bulletin 74-A, descriptive of the Sullivan **Drill Steel Furnace** for oil or gas fuel; bulletin 70-Y on its **Valveless Stoping Drills.** These bulletins are 6 x 9 in., illustrated.

Centrifugal Pumps. Dayton-Dowd Co., Quincy, Ill. Bulletin 249. Pp. 31; 7 x 10 in.; illustrated. Describes type CS single stage, double suction pump.

The Thew Shovel Co.'s, Lorain, Ohio, new catalog on its power shovels is issued in sections, comprising the following: Bulletin **111, Type O Steam Shovel**; bulletin 111-X, **Type O Continuous Tread**; bulletin 201, **Type O Electric Shovel**; bulletin 601, **Type O Gasoline Shovel**; bulletin 501, **Type O Cranes**; bulletin 112, **Type OO Steam Shovel**; bulletin 202, **Type OO Electric Shovel**; bulletin 602, **Type OO Gasoline Shovel**; bulletin 113, **Type A-1 Steam Shovel**, and a bulletin on **Lubrication.** The book is 8 x 11 in., well illustrated.

Switchboard Panels and Supporting Framework. General Electric Co., Schenectady, N. Y. Bulletin 47,002. Pp. 11; 8 x 10 in.; illustrated. Groups switchboard panels under two general classifications, the vertical type and the bench type, and should prove of interest to prospective buyers of switchboards.

Obituary

James B. Robinson, age 50 years, head of the coal brokerage firm of J. B. Robinson & Co., and also prominent coal operator of Birmingham, died Dec. 10 as a result of injuries received in an automobile accident. Mr. Robinson was president of the Liberty Coal Co., Little Gem Coal Co., Bibb Coal Co. and Aetna Coal Co., and had been a resident of the district for the past thirty years or more.

E. M. Radway, 35 years of age, president of the Richvein Coal Co., of Cincinnati, died Dec. 7 from pneumonia. Mr. Radway was a New Yorker by birth and came to Cincinnati after his graduation from Williams College in 1913. When the war broke out he joined the naval aerial corps and became a first lieutenant. Later he organized the Richvein company and had met with his measure of success. Mr. Radway married a daughter of William Rowe, president of the First National Bank, and leaves a son and daughter.

W. B. Everest, general traffic manager, **Westinghouse Electric & Manufacturing Co.,** died Dec. 5 at his home, 328 Emerson Avenue, Pittsburgh, where he had been confined for one week with pneumonia. Mr. Everest was born July 3, 1868, at Newark, New Jersey. After completing his high school education he entered the employ of the United States Electric Co. at Newark, N. J., which was later merged with the Westinghouse company. While at the Newark Works of the Electric Company he was chief clerk to the general superintendent of the works. In May, 1884, he was transferred to the East Pittsburgh Works, retaining his position of chief clerk. In 1895 he was transferred to the auditing department, in charge of cost, and was later appointed storekeeper and shipper, and then traffic manager of the East Pittsburgh works. In 1914 he was made general traffic manager of the company. He is survived by his widow, three daughters and one son.

James Montgomery Hurcomb, aged 51, well known throughout the Canadian coal trade, is dead at his home in Ottawa. He had been connected with the coal firm of C. C. Ray, starting in as clerk and rising to be managing director of the firm.

John Irving, sales agent of the Nova Scotia Steel & Coal Co., died at Montreal on Dec. 8, aged 55 years, after a protracted illness. He had been in the service of the company since 1898 and was prominent in commercial circles.

Coming Meetings

American Engineering Council will hold its annual meeting Jan. 11 and 12 at the headquarters of the Federated American Engineering Societies, 24 Jackson Place. Washington, D. C.

Northeast Kentucky Coal Association will hold its annual meeting Jan. 23, 1923, at the Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

Northern West Virginia Coal Operators' Association will meet Feb. 13 at Fairmont, W. Va. Secretary, G. S. Brackett, Fairmont, W. Va.

American Institute of Mining and Metallurgical Engineers will hold its annual meeting Feb. 19-22, 1923, at the Engineering Societies Building, New York City. Secretary, F. F. Sharpless, New York City.